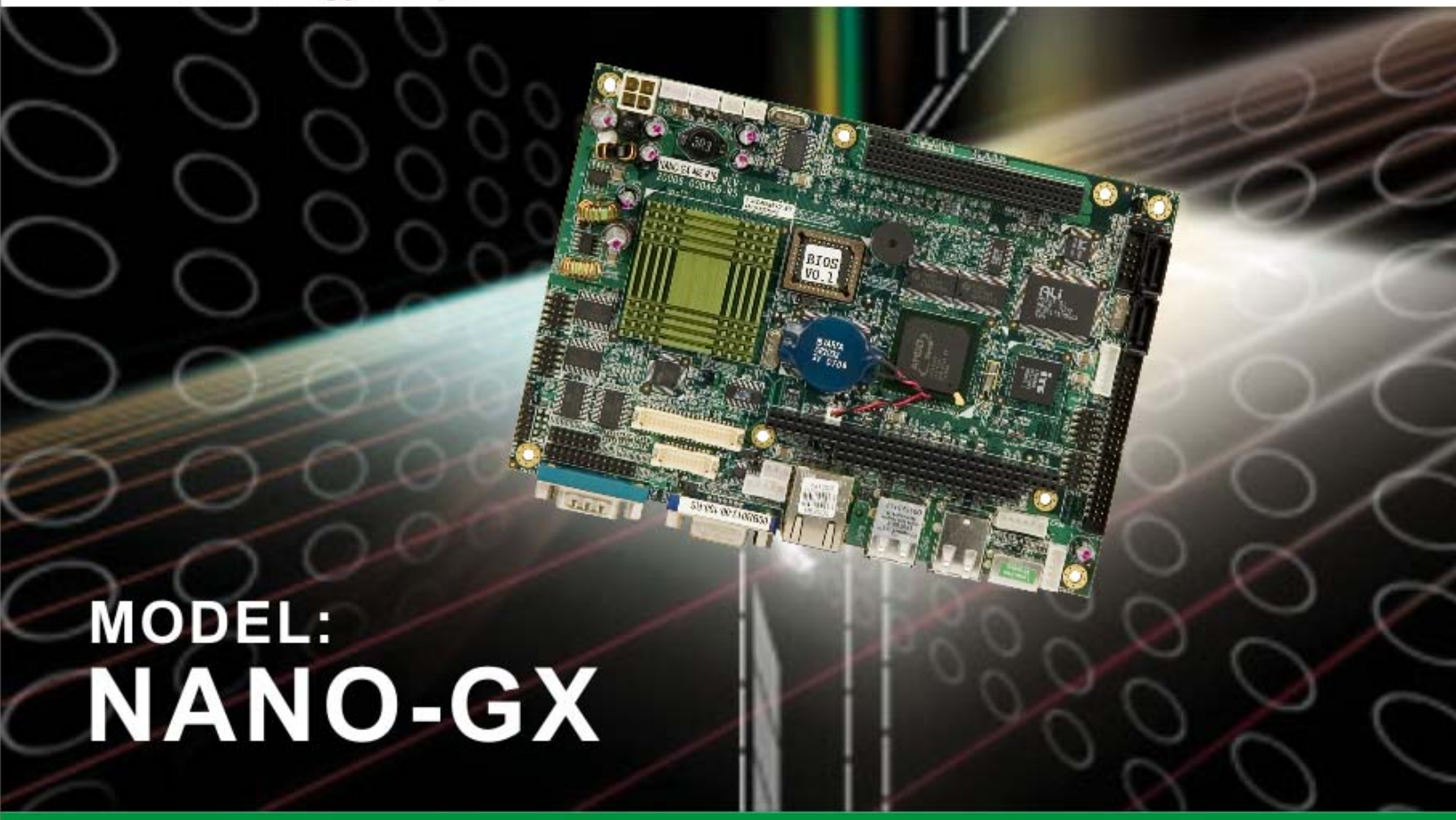
IEI Technology Corp.



MODEL:

NANO-GX

EPIC SBC with AMD Geode™ GX 466 CPU, SATA, CRT/LVDS, LAN, USB 2.0, and Audio

User Manual

Rev. 1.0 December, 2006

RoHS Lead Free

Revision History

Model Name	NANO-GX Motherboard	
Revision Number	**Description**	**Date of Issue**
1.0	Initial release	December 2006

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Packing List

NOTE:

If any of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the NANO-GX from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

The items listed below should all be included in the NANO-GX package.

- 1 x NANO-GX single board computer
- 1 x ATA33 flat cable
- 2 x SATA cables
- 1 x SATA Power cable
- 2 x RS-232 cables
- 1 x KB/MS cable
- 1 x Audio cable
- 1 x Power cable
- 1 x Mini jumper pack
- 1 x Utility CD
- 1 x QIG (quick installation guide)

Images of the above items are shown in **Chapter 3**.

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Glossary

AC '97	Audio Codec 97
ACPI	Advanced Configuration and Power Interface
APM	Advanced Power Management
ARMD	ATAPI Removable Media Device
ASKIR	Amplitude Shift Keyed Infrared
ATA	Advanced Technology Attachments
BIOS	Basic Input/Output System
CFII	CompactFlash® Type 2
CMOS	Complementary Metal Oxide Semiconductor
CPU	Central Processing Unit
Codec	Compressor/Decompressor
COM	Serial Port
DAC	Digital to Analog Converter
DDR	Double Data Rate
DIMM	Dual Inline Memory Module
DIO	Digital Input/Output
DMA	Direct Memory Access
EIDE	Enhanced IDE
FDD	Floppy Disk Drive
FDC	Floppy Disk Connector
FFIO	Flexible File Input/Output
FIFO	First In/First Out
FSB	Front Side Bus
IrDA	Infrared Data Association
HDD	Hard Disk Drive
IDE	Integrated Data Electronics
I/O	Input/Output
L1 Cache	Level 1 Cache
L2 Cache	Level 2 Cache
LCD	Liquid Crystal Display
LPT	Parallel Port Connector
LVDS	Low Voltage Differential Signaling
MAC	Media Access Controller
OS	Operating System
PCI	Peripheral Connect Interface
PIO	Programmed Input Output
PnP	Plug and Play
POST	Power On Self Test
RAM	Random Access Memory
SATA	Serial ATA
S.M.A.R.T	Self Monitoring Analysis and Reporting Technology
SPD	Serial Presence Detect
S/PDI	Sony/Philips Digital Interface
SDRAM	Synchronous Dynamic Random Access Memory
SIR	Serial Infrared
UART	Universal Asynchronous Receiver-transmitter
USB	Universal Serial Bus
VGA	Video Graphics Adapter

Chapter

1

Introduction

1.1 NANO-GX CPU Board Overview

The EPIC form factor NANO-GX AMD Geode™ GX 466 is a highly integrated embedded computer specifically optimized for multi-media applications requiring minimum installation space. The NANO-GX is particularly suitable for low power and fan-less applications. The NANO-GX supports a full range of functionality for an AT/ATX-compatible industrial computer in a space-saving 3.5" profile. The NANO-GX is equipped with an on board low-power consumption and high performance AMD Geode™ GX 466 processor. It also contains a DDR SODIMM socket that supports up to 512MB memory in size.

1.1.1 NANO-GX Models

The NANO-GX series has two models:

- NANO-GX-466-R10
- NANO-GXTC-466-R10

The specifications for the two models are show in **Table 1-1**.

	NANO-GX-466-R10	NANO-GXTC-466-R10
Audio	YES	YES
Dual LAN	YES	YES
CRT	YES	YES
TTL LCD	YES	NO
LVDS	YES	NO
SATA	YES	NO
USB 2.0	YES	YES

Table 1-1: NANO-GX Model Specifications

1.1.2 NANO-GX CPU Board Applications

The NANO-GX motherboard has been designed for use in industrial applications where board expansion is critical and operational reliability is essential.

1.1.3 NANO-GX CPU Board Benefits

Some of the NANO-GX motherboard benefits include,

- operating reliably in harsh industrial environments with ambient temperatures as high as 60°C
- rebooting automatically if the BIOS watchdog timer detects that the system is no longer operating

1.1.4 NANO-GX CPU Board Features

Some of the NANO-GX motherboard features are listed below:

- EPIC form factor
- Complies with RoHS
- Embedded AMD Geode™ GX 466 CPU
- Supports a maximum front side bus (FSB) speed up to 333MHz
- PC/104-Plus expansion slot
- Supports up to 512MB of 266MHz SODIMM DDR memory
- Comes with one high performance Ethernet (10/100M) controller
- Two SATA channels with transfer rates up to 150MB/s on-board
- Supports four USB 2.0 devices
- Integrated audio

1.2 NANO-GX Overview

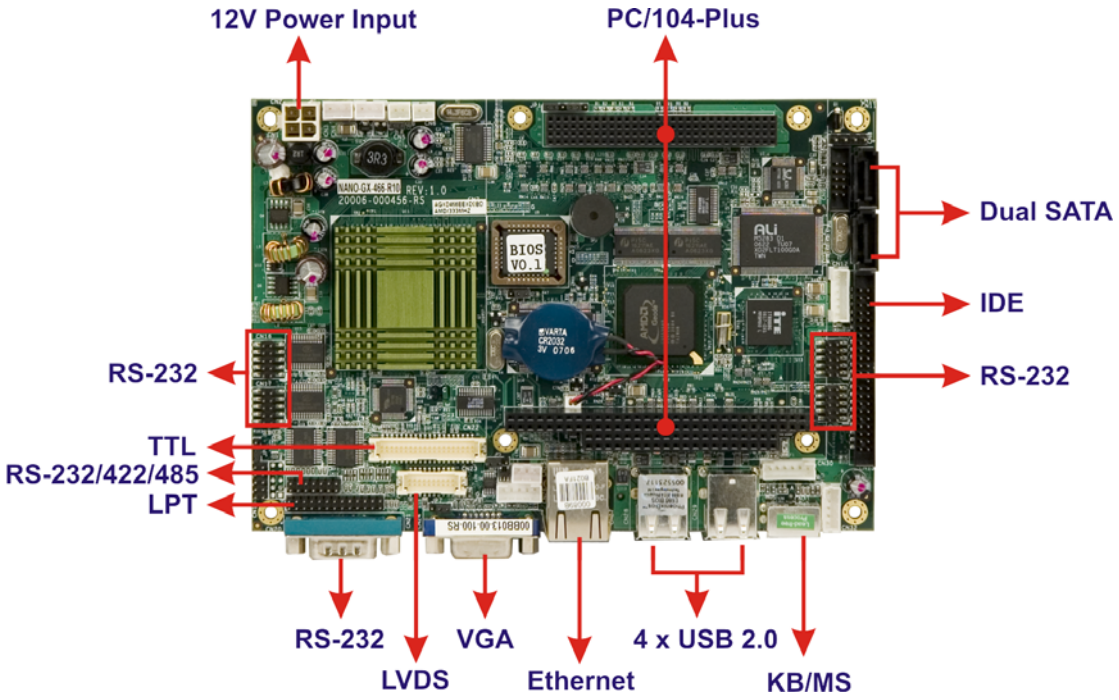


Figure 1-1: NANO-GX CPU Board Overview (Front Side)

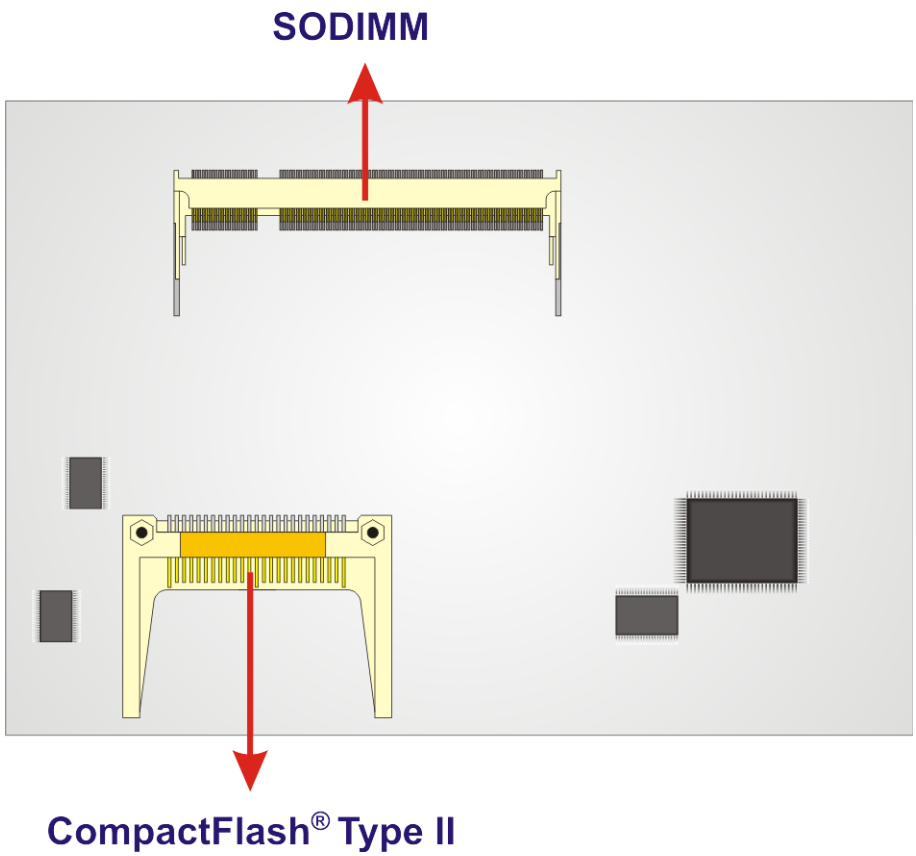


Figure 1-2: NANO-GX CPU Board Overview (Solder Side)

1.2.1 NANO-GX CPU Board Connectors

The NANO-GX has the following connectors onboard:

- 1 x ATX power button connector
- 1x ATX Suspend power input connector
- 1x Audio CD-IN connector
- 1x Audio connector
- 1x Backlight inverter connector
- 1x Digital I/O Connector
- 1x Fan connector
- 1x IrDA Infrared interface connector
- 1x Keyboard / mouse connector
- 1x Parallel port connector

- 1x Power and HDD LED connector
- 1x Power input connector
- 1x PC/104-Plus slot
- 1x PC/104-Plus power input connector
- 1x Reset button
- 2 x Serial ATA connectors
- 4 x Serial port RS2-232 connectors
- 1 x Serial and RS-422/485 port connector
- 1x TFT LVDS LCD Panel Connector
- 1x TFT TTL LCD (Hirose DF13-40DP-1.25V) connector

The NANO-GX has the following external peripheral interface connectors:

- 1 x Ethernet connector
- 1 x PS/2 Keyboard/mouse connector
- 1 x RS-232 connector
- 4 x USB 2.0 port connectors
- 1 x VGA connector

The NANO-GX has the following onboard jumpers:

- AT/ATX power mode select
- COM1/2 port RI and voltage selection (optional)
- CRT/LCD mode select
- LCD panel (LVDS/TTL) voltage select
- LCD panel shift clock setting
- PC/104-Plus VIO voltage select jumper & SERIRQ select
- RS-422/RS-485 select

The location of these connectors on the motherboard can be seen in **Figure 4-1**. These connectors are fully described in **Chapter 4**.

1.2.2 Technical Specifications:

NANO-GX motherboard technical specifications are listed in **Table 1-2**. Detailed descriptions of each specification can be found in **Chapter 2**.

SPECIFICATION	NANO-GX
Form Factor	EPIC
CPUs Supported	AMD Geode™ 466
Front Side Bus (FSB)	333MHz
System Chipset	AMD Geode™ CS5536
Display	CRT integrated in the AMD® Geode™ GX 466 18-bit single channel LVDS 24-bit TTL integrated in AMD® Geode™ GX 466 (NANO-GX-466-R10 only)
Memory	Supports one 200-pin, 266MHz, 512MB DDR SODIMM
BIOS	Award BIOS Label
SSD	CompactFlash® (CF)
Super I/O	W83627EHG
Audio	Realtek ALC203 with AC'97 Codec
LAN	RTL8100C
COM	Six RS-232 serial connectors, one RS-422/485 serial connector
USB2.0	Four USB 2.0 devices supported by four external USB 2.0 ports
IDE	One 44-pin IDE connects to two Ultra ATA33/66/100 devices

SPECIFICATION	NANO-GX
Parallel Port	One LPT port connector
SATA	Two 150Mb/s SATA connectors
KB/MS	One PS/2 connector and one onboard connector
WDT	Software programmable 1-255 sec. by super I/O
Digital I/O	8 bit digital I /O, 4 input/ 4 output by super I/O
Fan connector	One 3-pin for CPU Fan
Expansion	One PC/104-Plus expansion slot
Power	+12V only, AT/ATX support
Temperature	0ºC ~ 60ºC
Humidity	5% ~ 95% non-condensing
Dimensions	115mm x 165mm
Weight	GW: 950g; NW: 350g

Table 1-2: Technical Specifications

Chapter

2

Detailed Specifications

2.1 Overview

This chapter describes the specifications and on-board features of the NANO-GX in detail.

2.2 Dimensions

2.2.1 Board Dimensions

The dimensions of the board are listed below:

- **Length**: 165mm
- **Width**: 115mm

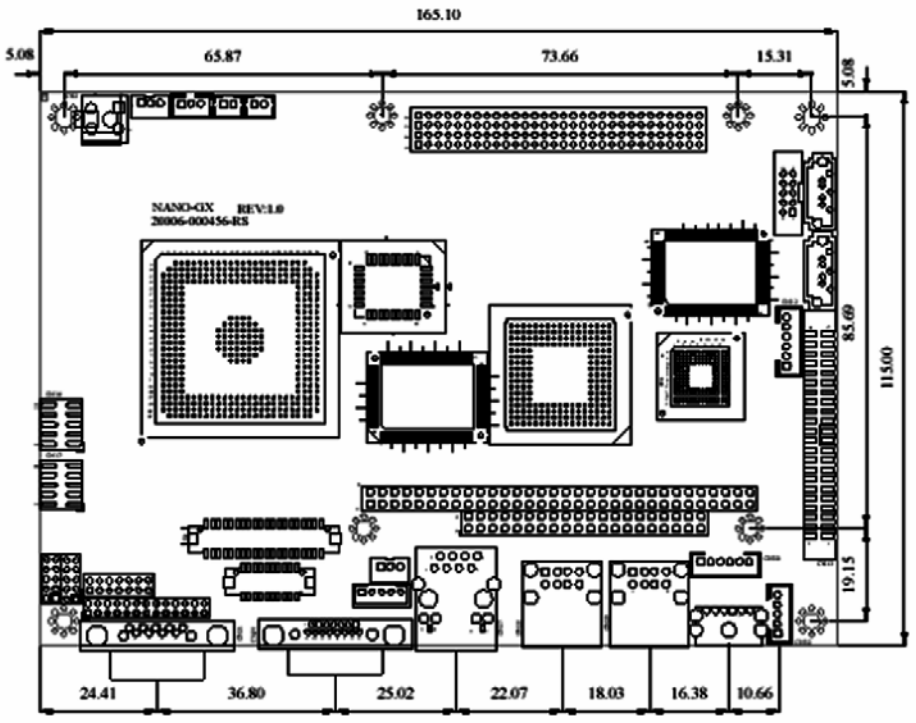


Figure 2-1: NANO-GX Dimensions (mm)

2.2.2 External Interface Panel Dimensions

External peripheral interface connector panel dimensions are shown in **Figure 2-2**.

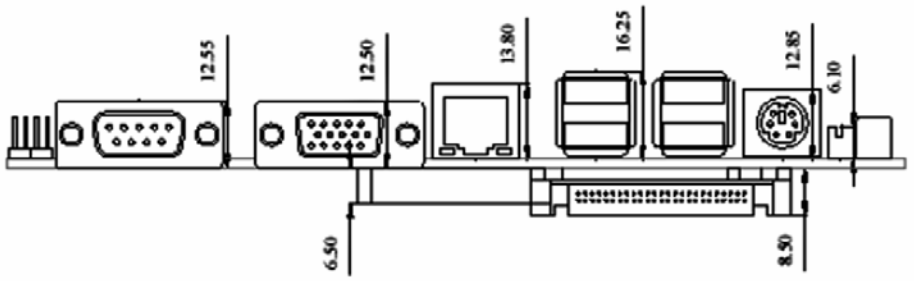


Figure 2-2: External Interface Panel Dimensions (mm)

2.3 Data Flow

The NANO-GX motherboard comes with an AMD Geode™ GX 466 and an AMD Geode™ CS5536 linked together by the GeodeLink™ Interface Unit. **Figure 2-3** shows the data flow between the system chipset, the CPU and other components installed on the motherboard.

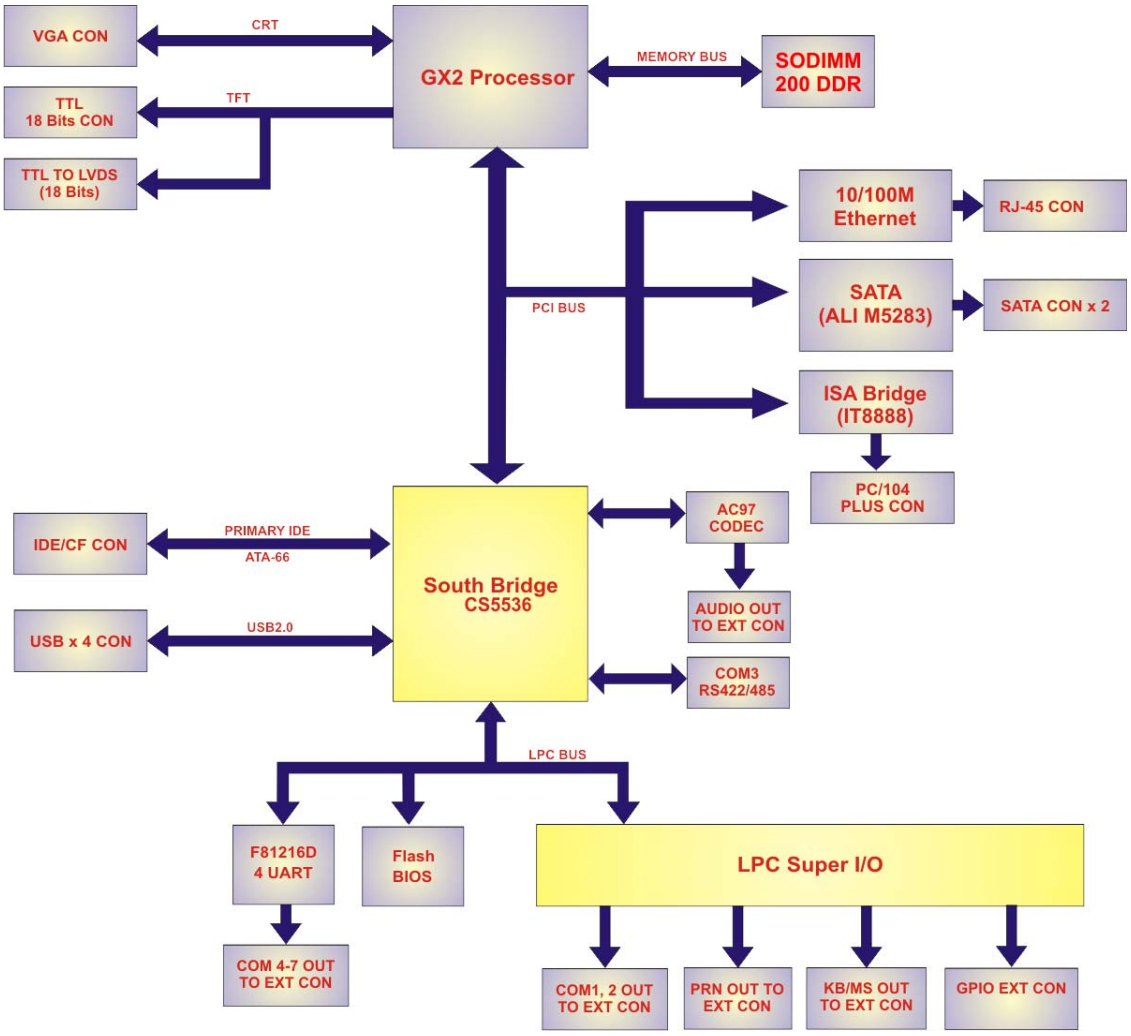


Figure 2-3: Data Flow Block Diagram

2.4 CPU Support

The NANO-GX series motherboards all come with a preinstalled AMD Geode™ GX 466 333MHz CPU.

2.4.1 Embedded AMD Geode™ GX 466 Specifications

The specifications for the 333MHz AMD Geode™ GX 466 are listed below.

- 32-bit low-power x86 processor with support for MMX and 3DNow! technology extensions
- 32KB of level 1 cache, 16KB instruction and 16KB data
- High-performance patented GeodeLink™ architecture
- Integrated display controller
  - Integrated video DACs and integrated TFT interface for flexible output options: CRT or TFT (bond-out option or strap selectable depending on package)
- PCI 66MHz bus
  - Industry standard PCI 2.2 specification compliant
  - Write gathering and write posting of inbound write requests
  - Supports fast back-to-back transactions
- 64-bit DDR memory controller
- Integrated thermal diode
- Optimized Unified Memory Architecture (UMA) with patented compression technology

Power management features for the AMD GX 466 processor are listed below:

- 3.4W max. @ 333MHz (CRT)
- Block level gating
- Active hardware power management
- Software power management
- Low power I/O

2.5 Graphics Support

Table 2-1 lists the NANO-GX graphics processor features.

Feature	AMD Geode™ GX 466 Processor
Color Depth	32 (24 plus 8 alpha blending)
ROPs	256
BLT Buffers	FIFOs in GP
BLT Splitting	Managed by hardware
Video Synchronized BLT/Vector	Throttle by VBLANK
Bresenham Lines	Yes
Screen to Screen BLT	Yes
Screen to Screen BLT with mono expansion	Yes
Memory to Screen BLT	Yes (through CPU writes)
Accelerated Text	No
Pattern Size (Mono)	8x8 pixels
Pattern Size (Color)	8x1 (32 bpp), 8x2 (16 bpp), 8x4 (8 bpp)
Monochrome Pattern	Yes
Dithered Pattern (4 color)	No
Color Pattern	8, 16, 32 bpp
Transparent Pattern	Monochrome
Solid Fill	Yes
Pattern Fill	Yes
Transparent Source	Monochrome
Color Key Source Transparency	Yes with mask

Feature	AMD Geode™ GX 466 Processor
Variable Source Stride	Yes
Variable Destination Stride	Yes
Destination Write Bursting	Yes
Selectable BLT Direction	Vertical and Horizontal
Alpha BLT	Yes
VGA Support	Decodes VGA Register

Table 2-1: Geode™ GX Graphics Processor Features

2.6 Memory Support

Up to 512MB of DDR 266MHz SODIMM is supported.

2.7 System Chipset

The NANO-GX motherboard has an AMD Geode™ CS5536 chipset installed. The AMD Geode™ CS5536 is a companion device for the AMD Geode™ GX 466 to create a high-performance, low-power x86 solution for embedded applications.

Technical specifications of the AMD Geode™ CS5536 chipset are listed below. For more information on these two chipsets, visit the AMD website.

- **GeodeLink™ Interface Unit**
  - 64-bit, 66MHz operation
  - PCI VSM (Virtual System Module) that makes the interface transparent to applications software and BIOS
  - Programmable routing descriptors, use and activity monitors, and SSMI (Synchronous System Management Interrupt)
- **ATA-6 Controller**
  - 100 MB/second IDE Controller in UDMA mode per the ATA-6 specification
  - 5V interface

- **Flash Interface**
  - Multiplexed with IDE interface Connects to an array of industry standard NAND Flash and/or NOR Flash
- **USB Controller**
  - 4 USB ports
  - Supports both USB 1.1 and USB 2.0
  - 4 host ports
- **Audio Codec 97 (AC97) Controller**
  - AC97 specification v2.3 compliant interface to multiple audio codecs: Serial In, Serial Out, Sync Out, Bit Clock In
  - Legacy “PC Beep” support
- **Diverse Device**
  - 82xx Legacy Devices
  - IR Communication Port
  - System Management Bus (SMB) Controller
  - LPC (Low Pin Count) Port
  - General Purpose I/Os (GPIOs)
  - 8 Multi-Function General Purpose Timers (MFGPTs)
  - Real-Time Clock (RTC) with CMOS RAM
- **Power Management Controller**
  - ACPI v2.0 compliant

2.7.1 GeodeLink™ Interface Unit

- 64-bit, 66MHz operation
- PCI VSM (Virtual System Module) that makes the interface transparent to applications software and BIOS
- Programmable routing descriptors, use and activity monitors, and SSMI (Synchronous System Management Interrupt)

2.7.2 AMD Geode™ CS5536 ATA-6 Controller

The single NANO-GX IDE connector supports two ATA-6 HDDs. An ATA-6 (Ultra ATA/100) compliant IDE controller on the AMD Geode™ CS5536 has a maximum transfer rate of 100MB/s. ATA-6 includes advancements in error checking and ATA-6 drives are compatible with future interface additions.

The onboard ATA-6 controller is able to support the following IDE HDDs:

- **Ultra ATA/100**, with data transfer rates up to 100MB/s
- **Ultra ATA/66**, with data transfer rates up to 66MB/s
- **Ultra ATA/33**, with data transfer rates up to 33MB/s

Specification	Ultra ATA/100	Ultra ATA/66	Ultra ATA/100
IDE devices	2	2	2
PIO Mode	0 – 4	0 – 4	0 – 4
PIO Max Transfer Rate	16.6 MB/s	16.6 MB/s	16.6 MB/s
DMA/UDMA designation	UDMA 3 - 4	UDMA 3 – 4	UDMA 2
DMA/UDMA Max Transfer	100MB/s	66MB/s	33MB/s
Controller Interface	5V	5V	5V

Table 2-2: Supported HDD Specifications

2.7.3 AMD Geode™ CS5536 Audio Codec 97 (AC'97) Controller

The AC'97 specification v2.3 compliant controller on the chipset is interfaced to a 20-bit DAC and 18-bit ADC full-duplex AC'97 2.3 stereo Realtek ALC203 codec. The ALC203 is then connected to a 10-pin audio connector to which an audio kit can easily be connected. The codec meets performance requirements for audio on PC99/2001 systems. Some of the codec features are listed below.

- Meets Microsoft® WHQL/WLP 2.0 audio requirements
- 20-bit DAC and 18-bit ADC resolution
- 18-bit Stereo full-duplex CODEC with independent and variable sampling rate
- Complies with AC'97 2.3 specifications
  - LINE/HP-OUT, MIC-IN and LINE-IN sensing
  - 14.318MHz -> 24.576MHz PLL saves crystal
  - 12.288MHz BITCLK input can be consumed
  - Integrated PCBEEP generator to save buzzer
  - Interrupt capability
  - Page registers and Analog Plug & Play
- Support of S/PDIF out is fully compliant with AC'97 rev2.3 specifications
- Three analog line-level stereo inputs with 5-bit volume control: LINE_IN, CD, AUX
- High quality differential CD input
- Two analog line-level mono input: PCBEEP, PHONE-IN
- Supports double sampling rate (96KHz) of DVD audio playback
- Two software selectable MIC inputs
- +6/12/20/30dB boost preamplifier for MIC input
- Stereo output with 6-bit volume control
- Mono output with 5-bit volume control
- Headphone output with 50mW/20Ohm amplifier
- 3D Stereo Enhancement
- Multiple CODEC extension capability
- External Amplifier Power Down (EAPD) capability
- Power management and enhanced power saving features
- Stereo MIC record for AEC/BF application
- DC Voltage volume control
- Auxiliary power to support Power Off CD
- Adjustable VREFOUT control
- 2 GPIO pins with smart GPIO volume control
- 2 Universal Audio Jacks (UAJ)® for front panel
- Supports 32K/44.1K/48K/96KHz S/PDIF output
- Supports 32K/44.1K/48KHz S/PDIF input
- Power support: Digital: 3.3V; Analog: 3.3V/5V
- Standard 48-Pin LQFP Package

- EAX™ 1.0 & 2.0 compatible
- Direct Sound 3D™ compatible
- A3D™ compatible
- I3DL2 compatible
- HRTF 3D Positional Audio
- Sensaura™ 3D Enhancement (optional)
- 10 Bands of Software Equalizer
- Voice Cancellation and Key Shifting in Karaoke mode
- AVRack® Media Player

2.7.4 AMD Geode™ CS5536 Flash Interface

The NANO-GX CompactFlash® socket supports standard CF Type I and CF Type II cards. The chipset flash interface is multiplexed with an IDE interface and can be connected to an array of industry standard NAND Flash or NOR Flash devices.

2.7.5 AMD Geode™ CS5536 USB Controller

Four external USB ports on the NANO-GX board are interfaced to the chipset USB controller. Four USB 1.1 or USB 2.0 devices can be connected simultaneously to the NANO-GX. The chipset USB controller has the following specifications:

- 4 USB ports
- USB 1.1 and USB 2.0 compliant
- 4 host ports

2.7.6 AMD® Geode™ CS5536 Serial Communications

Seven high-speed UART serial port connectors (six RS-232 and one that can be configured as RS-422 or RS-485) are connected to the system chipset low pin count (LPC) port via the LPC bus. The specifications for the serial ports are listed below.

- 16C550 UART with 16-byte FIFO buffer
- 115.2Kbps transmission rate

2.7.7 AMD Geode™ CS5536 Real Time Clock

The system chipset has a battery backed up 256-byte real-time clock (RTC) with CMOS RAM.

2.7.8 BIOS

The BIOS flash memory chip on the NANO-GX has a licensed copy of AWARD BIOS loaded onto it. The BIOS flash memory chip is connected to the chipset via the LPC bus. The flash BIOS features are listed below:

- SMIBIOS (DMI) compliant
- Console redirection function support
- PXE (**P**re-Boot E**x**ecution **E**nvironment) support
- USB booting support

2.8 GeodeLink™ PCI Bridge

2.8.1 Overview

The GeodeLink™ PCI Bridge (GLPCI) module provides a PCI interface for GeodeLink Interface Unit-based designs. The GLPCI module is composed of six major blocks:

- GeodeLink Interface
- FIFO/Synchronization
- Transaction Forwarding
- PCI Bus Interface
- PCI Arbiter

The GeodeLink™ and PCI Bus Interface blocks provide adaptation to the respective buses. The Transaction Forwarding block provides bridging logic. Some of the features of the GeodeLink™ PCI Bridge are listed below:

- PCI Version 2.2 compliance
- 32-bit, 66 MHz PCI bus operation
- Target support for fast back-to-back transactions

- Arbiter support for three external PCI bus masters
- Write gathering and write posting for in-bound write requests
- Virtual PCI header support
- Delayed transactions for in-bound read requests
- Zero wait state operation within a PCI burst
- Dynamic clock stop/start support for GLIU and PCI clock domains (this is not CLKRUN support)
- Capable of handling out of bound transactions immediately after reset

2.8.2 10/100M Ethernet

A highly integrated and cost-effective single-chip, fast Realtek RTL8100C 10/100M Ethernet controller is interfaced through first the PCI bus and then through the GeodeLink™ PCI Bridge to the CPU and system chipset. The Realtek RTL8100C controller provides 10Mbps or 100Mbps Ethernet connectivity to the NANO-GX. Some of the features of the RealTek RTL8100C are listed below.

- 10Mbps and 100Mbps operation
- Supports 10Mbps and 100Mbps N-way auto-negotiation
- Supports 25MHz Crystal or 25MHz OSC as the internal clock source
- Complies with PC99/PC2001 standards
- Supports ACPI power management
- Provides PCI bus master data transfer
- Provides PCI memory space or I/O space mapped data transfer
- Supports PCI clock speed of 16.75MHz-40MHz
- Advanced power saving mode
- Supports Wake-on-LAN and remote wake-up (AMD Magic Packet™, Link Change, and Microsoft® Wake-up frame)
- Half/Full duplex capability
- Supports Full Duplex Flow Control (IEEE 802.3x)
- Provides interface to 93C46 EEPROM to store resource configuration and ID parameters
- Provides PCI clock run pin
- Provides LED pins for network operation status indication
- 2.5/3.3V power supply with 5V tolerant I/Os

2.8.3 Drive Interfaces

The NANO-GX can support the following drive interfaces.

- 2 x SATA drives
- 2 x IDE devices
- 1 x CompactFlash® card

2.8.3.1 SATA Drives

The NANO-GX supports two, first generation SATA drives with transfer rates of up to 150Mb/s

2.8.3.2 IDE HDD Interfaces

The NANO-GX system chipset IDE controller supports up to two HDDs with the following specifications:

- Supports PIO IDE transfers up to 16MB/s
- Supports the following Ultra ATA devices:
  - **Ultra ATA/100**, with data transfer rates up to 100MB/s
  - **Ultra ATA/66**, with data transfer rates up to 66MB/s
  - **Ultra ATA/33**, with data transfer rates up to 66MB/s

2.8.3.3 CompactFlash® Support

A standard CompactFlash® Type I (CF I) or Type II or (CF II) card can be inserted into the compact flash slot on the solder side of the NANO-GX PCB.

2.8.4 PCI to ISA Bridge

An ITE IT8888G PCI to ISA bridge single function device connects the onboard NANO-GX ISA bus PC/104 connector to the GeodeLink™ PCI bridge. The IT8888G has a PCI specification v2.1 compliant 32-bit PCI bus interface and supports both PCI Bus master and slave. The PCI interface supports both programmable positive and full subtractive decoding schemes. Some of the features of the IT8888G PCI to ISA bridge are listed below.

- PCI Interface
- Programmable PCI Address Decoders
- PC/PCI DMA Controller
- Distributed DMA Controller
- ISA Interface
- SM Bus
- 1 analog line-level mono output: MONO_OUT
- Power-on Serial Bus Configuration
- Serial IRQ
- Versatile power-on strapping options
- Supports NOGO function
- Single 33 MHz Clock Input
- +3.3V PCI I/F with +5V tolerant I/O buffers
- +5V ISA I/F and core Power Supply

2.9 Environmental and Power Specifications

2.9.1 System Monitoring

The NANO-GX is capable of self-monitoring various aspects of its operating status including:

- CPU, chipset, and battery voltage, +3.3V, +5V, and +12V
- RPM of cooling fans
- CPU and board temperatures (by the corresponding embedded sensors)

2.9.2 Operating Temperature and Temperature Control

The maximum and minimum operating temperatures for the NANO-GX are listed below.

- Minimum Operating Temperature: 0ºC (32°F)
- Maximum Operating Temperature: 60°C (140°F)

A cooling fan and heat sink must be installed on the CPU. Thermal paste must be smeared on the lower side of the heat sink before it is mounted on the CPU. Heat sinks are also mounted on the Northbridge and Southbridge chipsets to ensure the operating temperature of these chips remain low.

2.9.3 Power Consumption

Table 2-3 shows the power consumption parameters for the NANO-GX when an AMD Geode™ GX 466 processor is running with one 512MB DDR400 memory module.

Voltage	Current
+12V	0.83A

Table 2-3: Power Consumption

Chapter

3

Unpacking

3.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the NANO-GX may result in permanent damage to the NANO-GX and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the NANO-GX. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the NANO-GX, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***:- Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring the NANO-GX, place it on an antic-static pad. This reduces the possibility of ESD damaging the NANO-GX.
- ***Only handle the edges of the PCB***:-: When handling the PCB, hold the PCB by the edges.

3.2 Unpacking

3.2.1 Unpacking Precautions

When the NANO-GX is unpacked, please do the following:

- Follow the anti-static precautions outlined in **Section 3.1**.
- Make sure the packing box is facing upwards so the NANO-GX does not fall out of the box.
- Make sure all the components shown in **Section 3.3** are present.

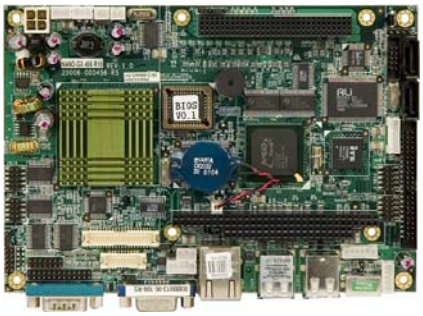
3.3 Unpacking Checklist

NOTE:

If some of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the NANO-GX from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

3.3.1 Package Contents

The NANO-GX is shipped with the following components:

Quantity	Item	Image
1	NANO-GX	
1	Audio Cable	
1	ATA33 Flat Cable	

1	Dual RS-232 Cable	
1	Mini jumper pack	
1	KB/MS Y cable	
2	SATA cable	
1	SATA power cable	
1	Quick Installation Guide	
1	Utility CD	

Table 3-1: Package List Contents

Chapter

4

Pinouts

CHAPTER OVERVIEW

This chapter shows the locations and provides detailed descriptions of the connector pinouts for both internal and external peripheral interface connectors.

4.1 Peripheral Interface Connectors

Section 4.1.2 shows peripheral interface connector locations. **Section 4.1.2** lists all the peripheral interface connectors seen in **Section 4.1.2**.

4.1.1 NANO-GX Layout

Figure 4-1 shows the on-board peripheral connectors, rear panel peripheral connectors and on-board jumpers.

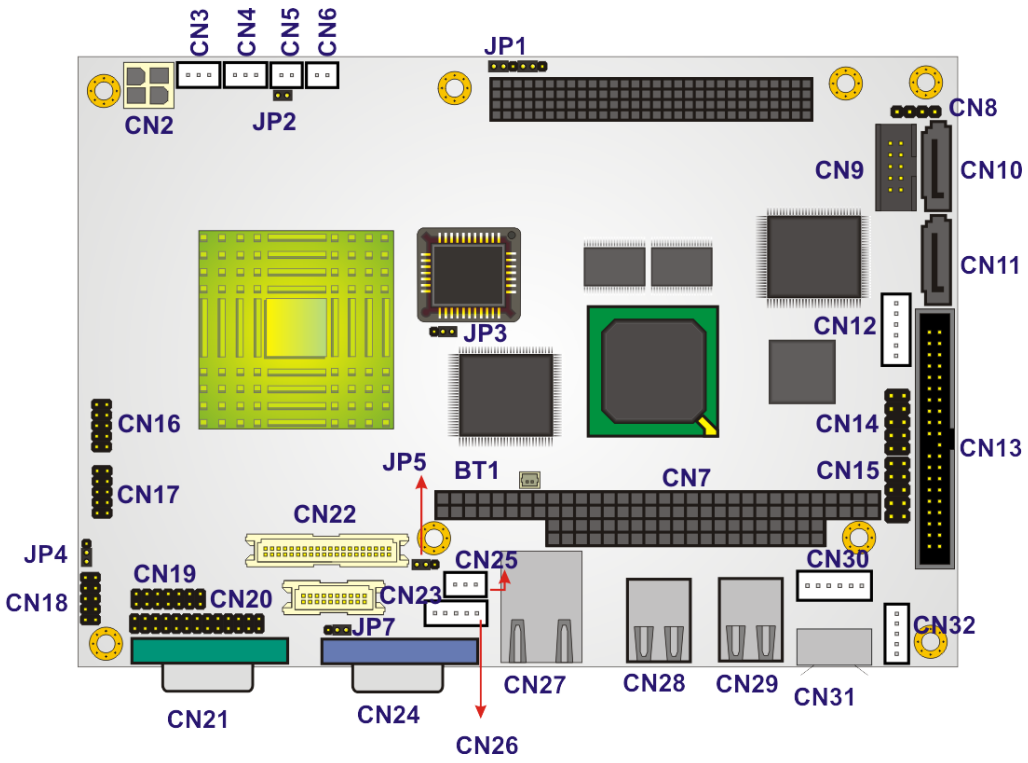


Figure 4-1: Connector and Jumper Locations

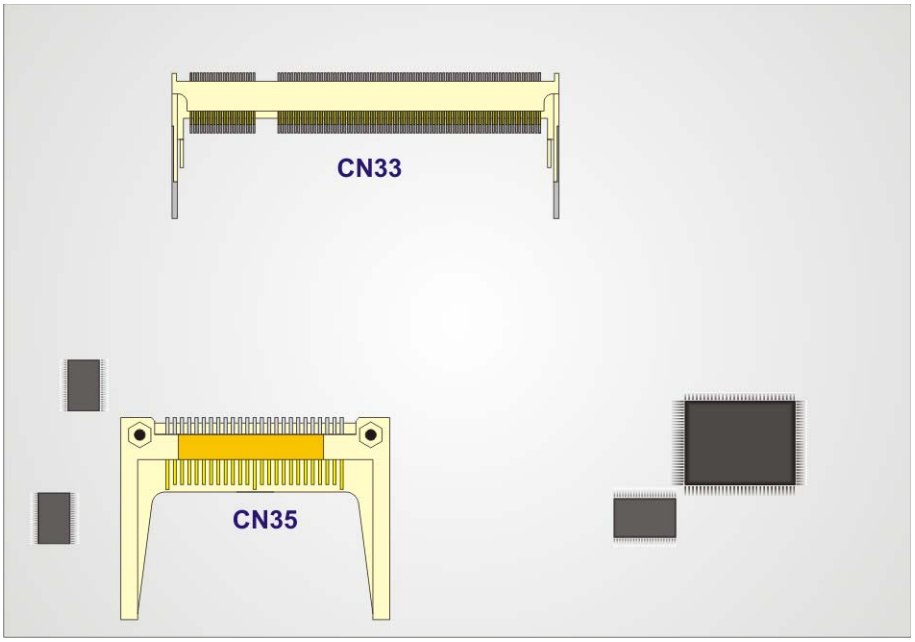


Figure 4-2: Connector and Jumper Locations (Solder Side)

4.1.2 Peripheral Interface Connectors

Table 4-1 shows a list of the peripheral interface connectors on the WAFER-LX. Detailed descriptions of these connectors can be found below.

Connector	Type	Label
12V Power input connector	4-pin wafer	CN2
ATX power button connector	2-pin wafer	CN5
ATX Suspend power input connector	3-pin wafer	CN3
Audio CD-IN connector	4-pin header	CN8
Audio connector	10-pin box header	CN9
Backlight inverter connector	5-pin wafer	CN26
Digital I/O connector	10-pin header	CN18

Connector	Type	Label
Fan connector	3-pin wafer	CN4
IrDA Infrared interface connector	5-pin wafer	CN32
Keyboard / mouse connector	6-pin wafer	CN30
Parallel port connector	26-pin header	CN20
Power and HDD LED connector	6-pin wafer	CN12
PC/104-Plus slot	140-pin PC/104 + 120-pin PCI-104	CN7
PC/104-Plus power input connector	3-pin wafer	CN25
Reset button	2-pin wafer	CN6
Serial ATA connectors	7-pin SATA connector	CN10, CN11
Serial port RS2-232 connectors	10-pin header	CN14, CN15, CN16, CN17
Serial and RS-422/485 port connector	14-pin header	CN19
TFT LVDS LCD panel connector	20-pin crimp	CN23
TFT TTL LCD (Hirose DF13-40DP-1.25V) connector	40-pin crimp	CN22

Table 4-1: Peripheral Interface Connectors

4.1.3 External Interface Panel Connectors

Table 4-2 lists the rear panel connectors on the NANO-GX. Detailed descriptions of these connectors can be found in **Section 4.1**.

Connector	Type	Label
Ethernet connector	RJ-45	CN27
PS/2 Keyboard/mouse connector	Mini-DIN 6 PS/2	CN31
RS-232 serial port connector	9-pin male	CN21
USB 2.0 ports	Combo USB port	CN28, CN29
VGA port connector	15-pin female	CN24

Table 4-2: Rear Panel Connectors

4.2 Internal Peripheral Connectors

Internal peripheral connectors are found on the motherboard and are only accessible when the motherboard is outside of the chassis. This section has complete descriptions of all the internal, peripheral connectors on the NANO-GX.

4.2.1 12V Power Input Connector

CN Label: **CN2**

CN Type: 4-pin wafer (2x2)

CN Location: See **Figure 4-3**

CN Pinouts: See **Table 4-3**

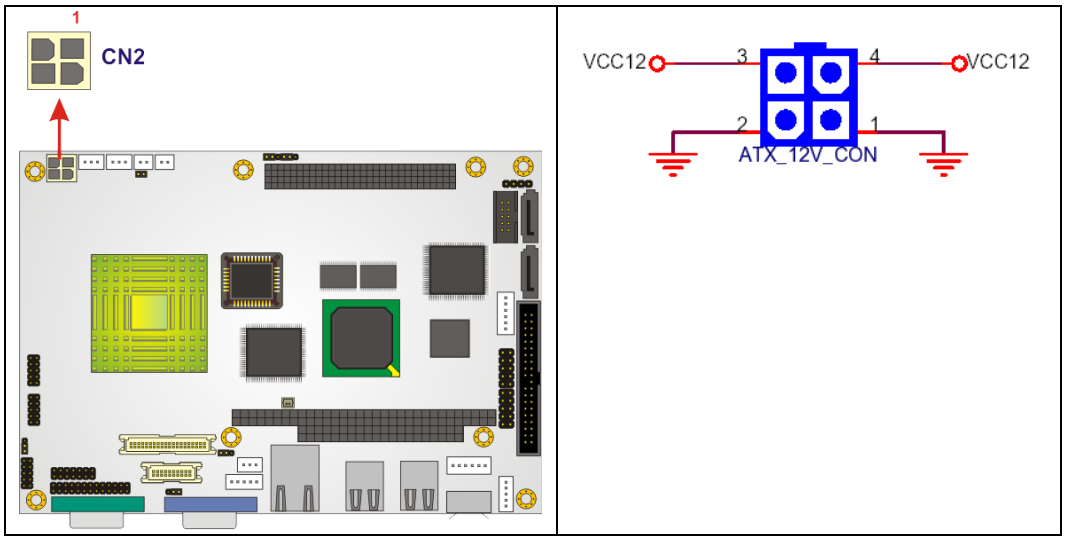


Figure 4-3: 12V Power Input Connector Pinouts

PIN NO.	DESCRIPTION
1	GROUND
2	GROUND
3	Power IN(+12V)
4	Power IN(+12V)

Table 4-3: 12V Power Input Connector Pinouts

4.2.2 ATX Power Button Connector

CN Label: **CN5**

CN Type: 2-pin wafer

CN Location: See **Figure 4-4**

CN Pinouts: See **Table 4-4**

The power button connector is connected to a power switch on the system chassis to enable users to turn the system on and off.

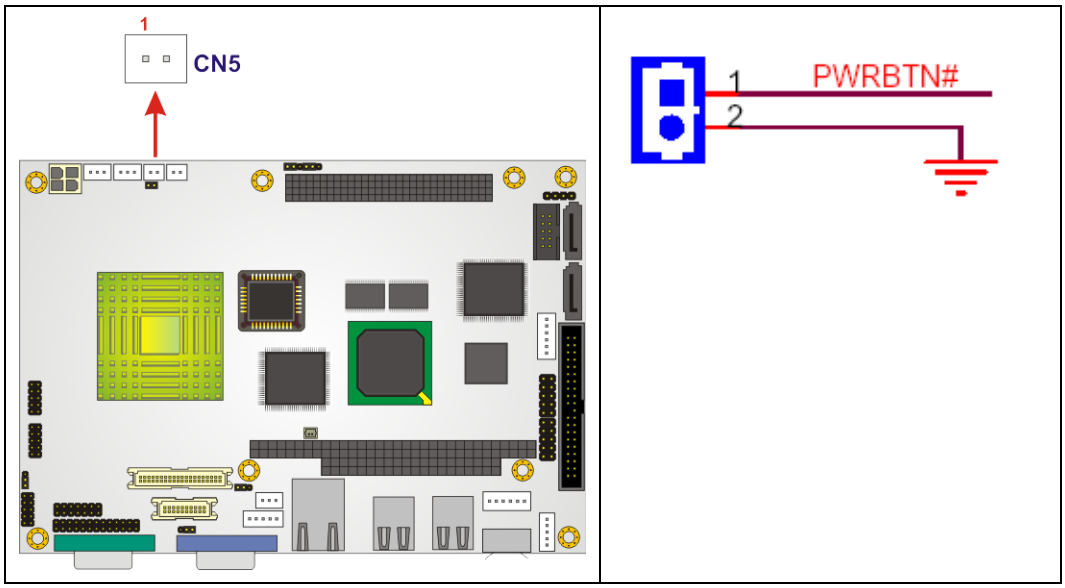


Figure 4-4: ATX Power Button Connector Location

PIN NO.	DESCRIPTION
1	ATX Power button +
2	ATX Power button -

Table 4-4: AT Power Connector Pinouts

4.2.3 ATX Suspend Power Input Connector

CN Label: **CN3**

CN Type: 3-pin wafer

CN Location: See **Figure 4-5**

CN Pinouts: See **Table 4-5**

The suspend power input connector connects to an ATX power supply.

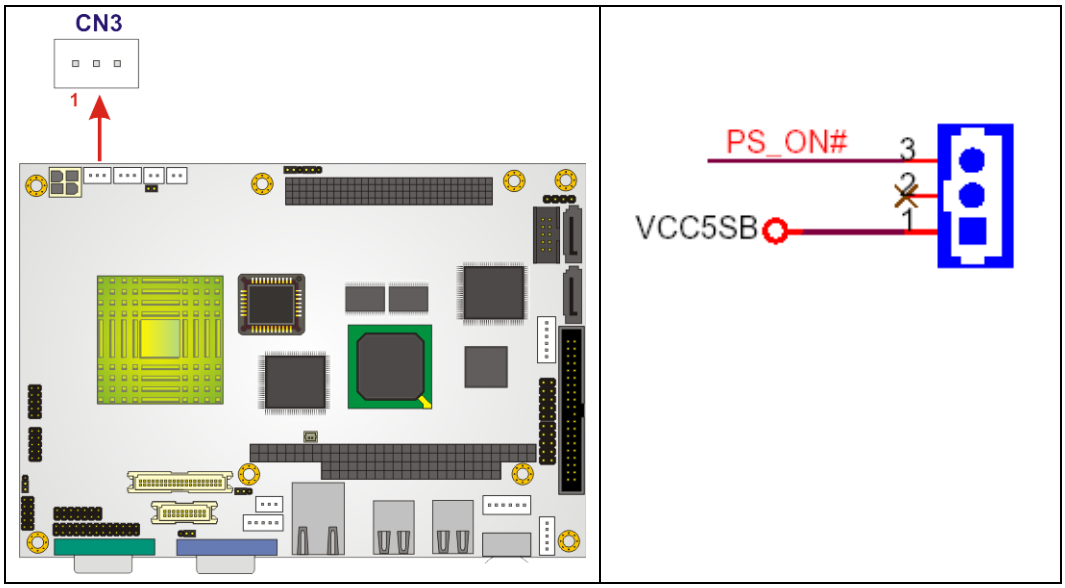


Figure 4-5: ATX Suspend Power Input Connector Location

PIN NO.	DESCRIPTION
1	5VSB
2	NC
3	PS_ON

Table 4-5: ATX Suspend Power Input Connector Pinouts

4.2.4 Audio Connector (10-pin)

CN Label: **CN9**

CN Type: 10-pin box header

CN Location: See **Figure 4-6**

CN Pinouts: See **Table 4-6**

The 10-pin audio connector is connected to external audio devices including speakers and microphones for the input and output of audio signals to and from the system.

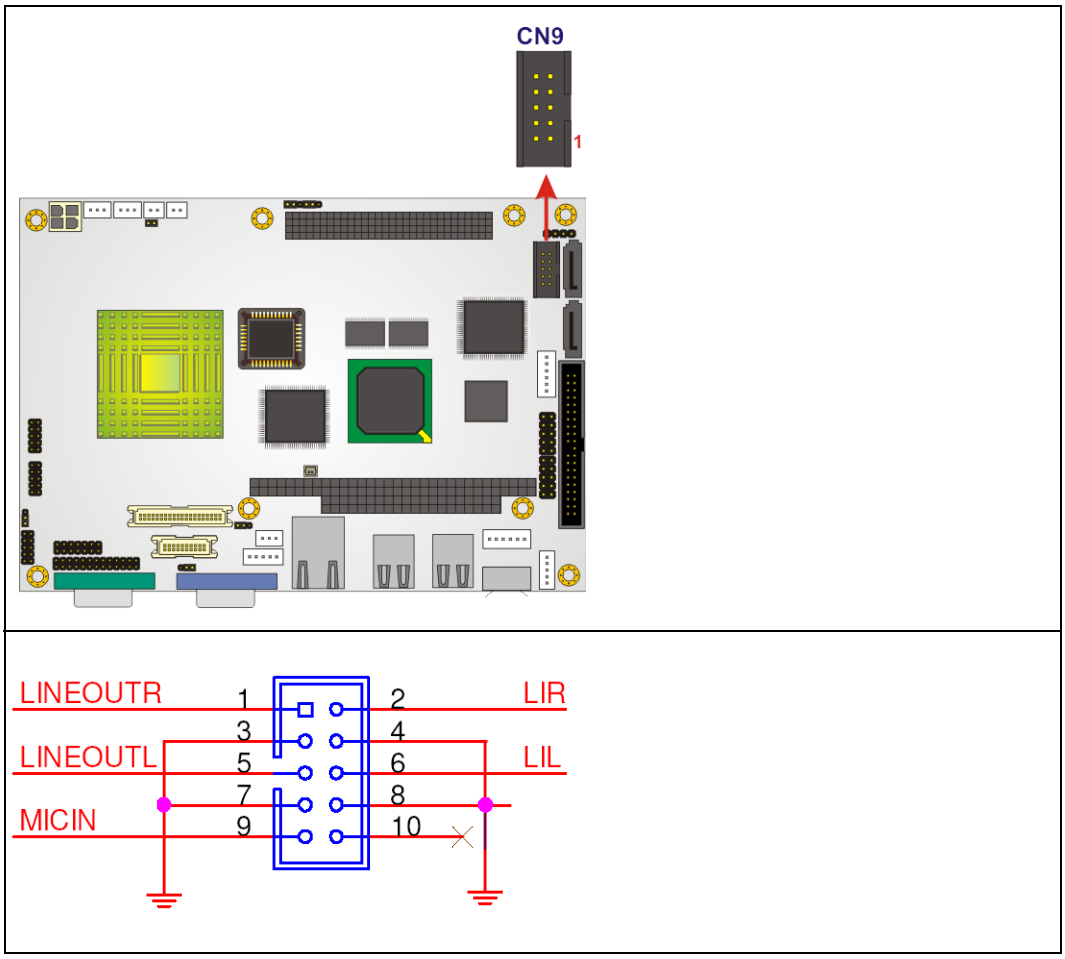


Figure 4-6: Audio Connector Pinouts (10-pin)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LINE_OUT_R	2	LINE_IN_R
3	GROUND	4	GROUND
5	LINE_OUT_L	6	LINE_IN_L
7	GROUND	8	GROUND
9	MIC1	10	NC

Table 4-6: Audio Connector Pinouts (10-pin)

4.2.5 Audio CD In Connector (4-pin)

CN Label: **CN8**

CN Type: 4-pin header

CN Location: See **Figure 4-7**

CN Pinouts: See **Table 4-7**

The 4-pin audio CD in connector is connected to an external audio CD device for the input and output of audio signals from a CD player to the system.

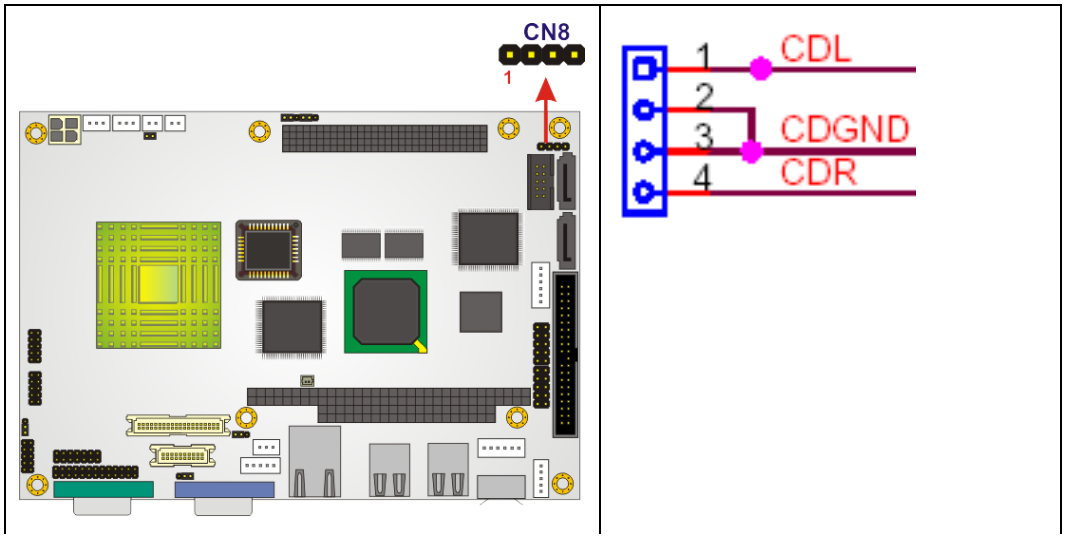


Figure 4-7: Audio CD In Connector Pinouts (4-pin)

PIN NO.	DESCRIPTION
1	CD Signal (Left)
2	Ground
3	Ground
4	CD Signal (Right)

Table 4-7: Audio CD In Connector Pinouts

4.2.6 Backlight Inverter Connector

CN Label: **CN26**

CN Type: 5-pin wafer

CN Location: See **Figure 4-8**

CN Pinouts: See **Table 4-8**

The backlight inverter connector provides the backlight on the LCD display connected to the NANO-GX with +12V of power.

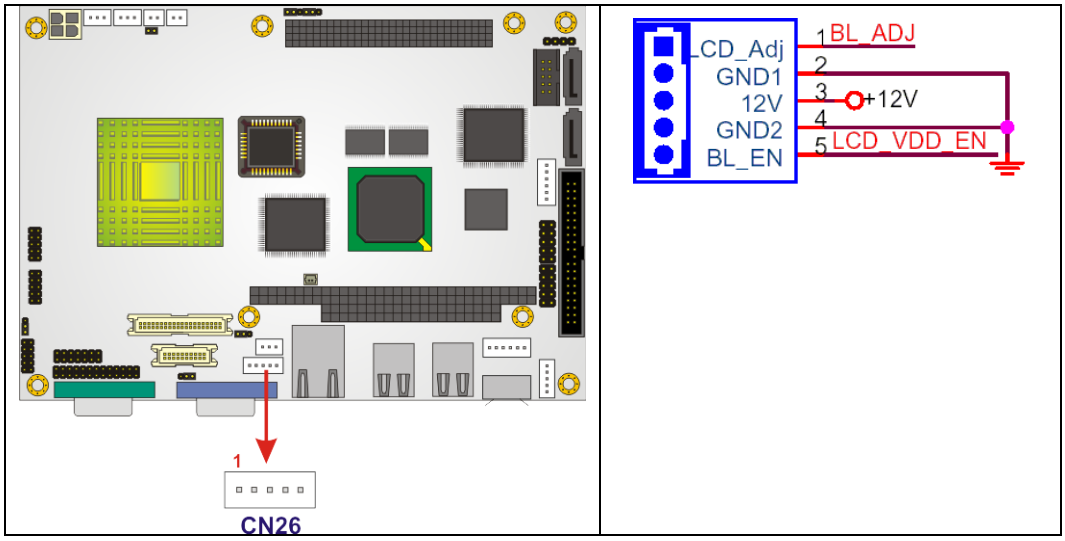


Figure 4-8: Backlight Inverter Connector Pinout Location

PIN NO.	DESCRIPTION
1	BL_ADJ (DEFAULT: GND)
2	GND
3	VCC12
4	GND
5	VDD_EN

Table 4-8: Backlight Inverter Connector Pinouts

4.2.7 CompactFlash® Socket

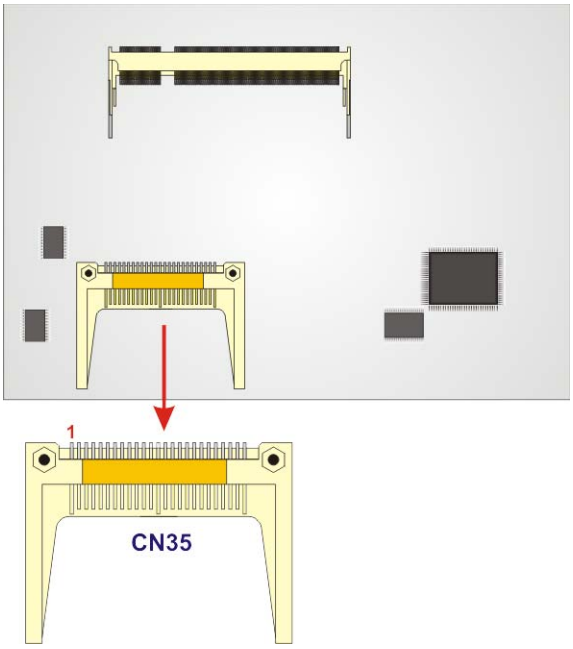
CN Label: **CN35** (solder side)

CN Type: 50-pin header (2x25)

CN Location: See **Figure 4-9**

CN Pinouts: See **Table 4-9**

A CF Type I or Type II memory card is inserted to the CF socket on the solder side of the NANO-GX.



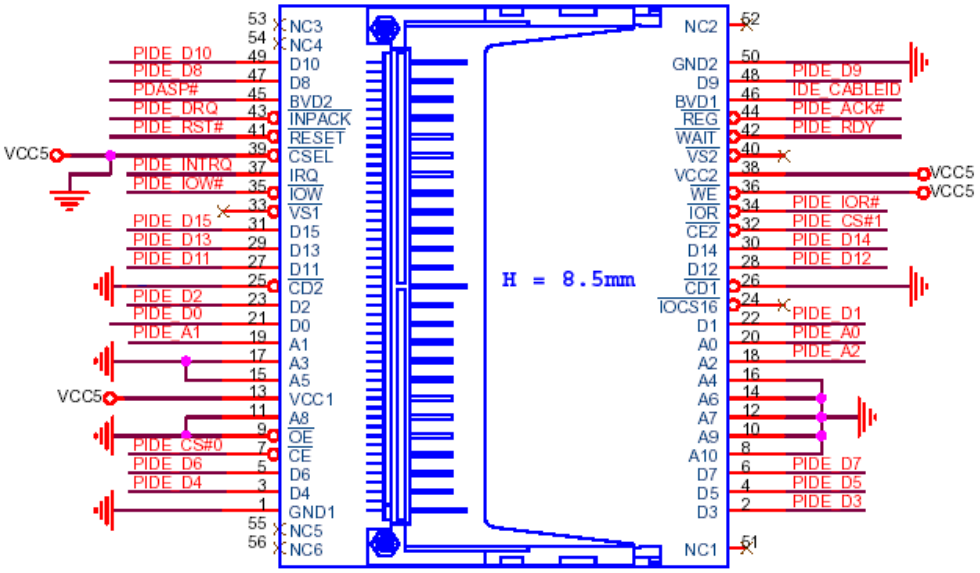


Figure 4-9: CF Card Socket Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	26	GND
2	DATA 3	27	DATA 11
3	DATA 4	28	DATA 12
4	DATA 5	29	DATA 13
5	DATA 6	30	DATA 14
6	DATA 7	31	DATA 15
7	HDC_CS0#	32	HDC_CS1
8	GND	33	N/C
9	GROUND	34	IOR#
10	GND	35	IOW#
11	GND	36	VCC5
12	GND	37	IRQ15
13	VCC5	38	VCC5
14	GND	39	CSEL
15	GND	40	N/C
16	GND	41	HDD_RESET
17	GND	42	RDY

18	SA2	43	DRQ
19	SA1	44	DACK#
20	SA0	45	HDD_ACTIVE#
21	DATA 0	46	CABLEID
22	DATA 1	47	DATA 8
23	DATA 2	48	DATA 9
24	N/C	49	DATA 10
25	GND	50	GROUND

Table 4-9: CF Card Socket Pinouts

4.2.8 Digital Input/Output (DIO) Connector

CN Label: **CN18**

CN Type: 10-pin header (2x5)

CN Location: See **Figure 4-10**

CN Pinouts: See **Table 4-10**

The digital input/output connector is managed through a Super I/O chip. The DIO connector pins are user programmable.

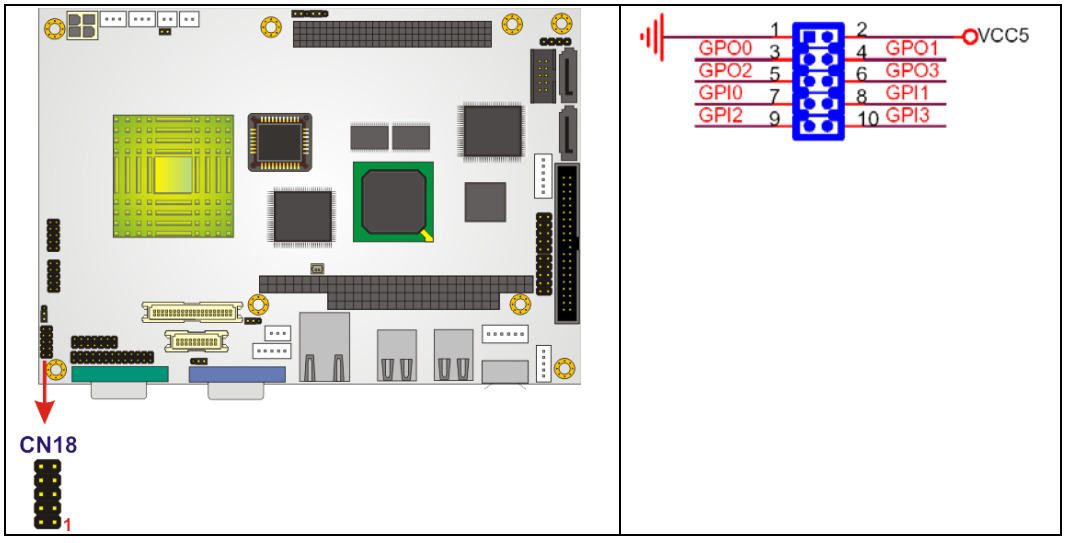


Figure 4-10: DIO Connector Connector Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC5
3	Output 0	4	Output 1
5	Output 2	6	Output 3
7	Input 0	8	Input 1
9	Input 2	10	Input 3

Table 4-10: DIO Connector Connector Pinouts

4.2.9 Fan Connector (+5V)

CN Label: **CN4**

CN Type: 3-pin wafer

CN Location: See **Figure 4-11**

CN Pinouts: See **Table 4-11**

The cooling fan connector provides a 5V, 500mA current to a system cooling fan. The connector has a "rotation" pin to get rotation signals from fans and notify the system so the system BIOS can recognize the fan speed. Please note that only specified fans can issue the rotation signals.

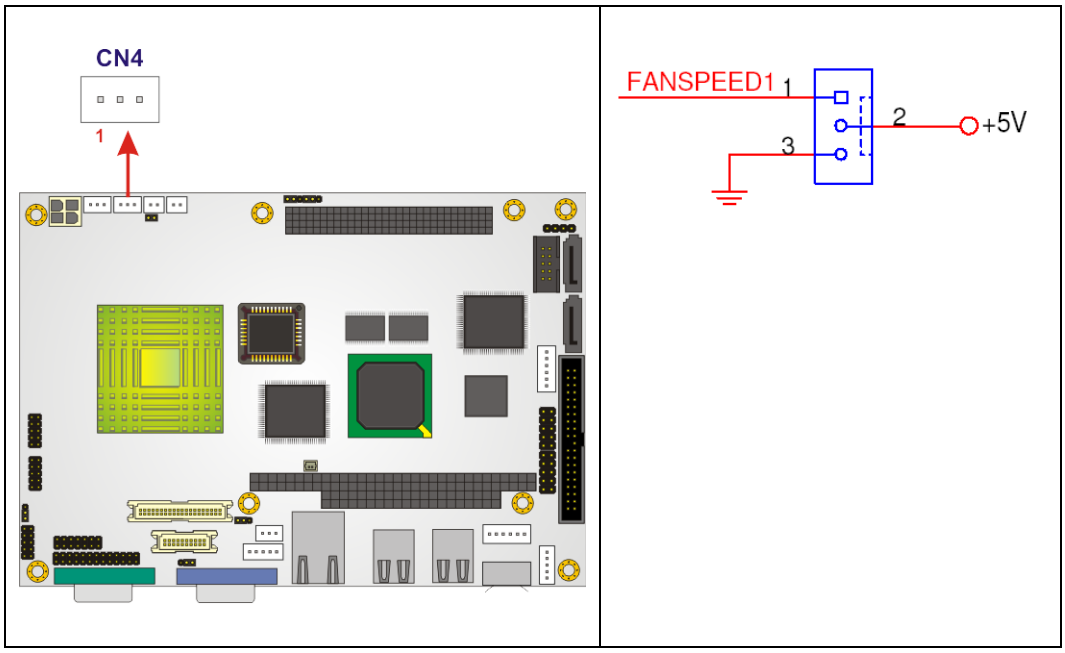


Figure 4-11: +5V Fan Connector Location

PIN NO.	DESCRIPTION
1	Fan Speed Detect
2	+5V
3	GND

Table 4-11: +5V Fan Connector Pinouts

4.2.10 IDE Connector(44-pin)

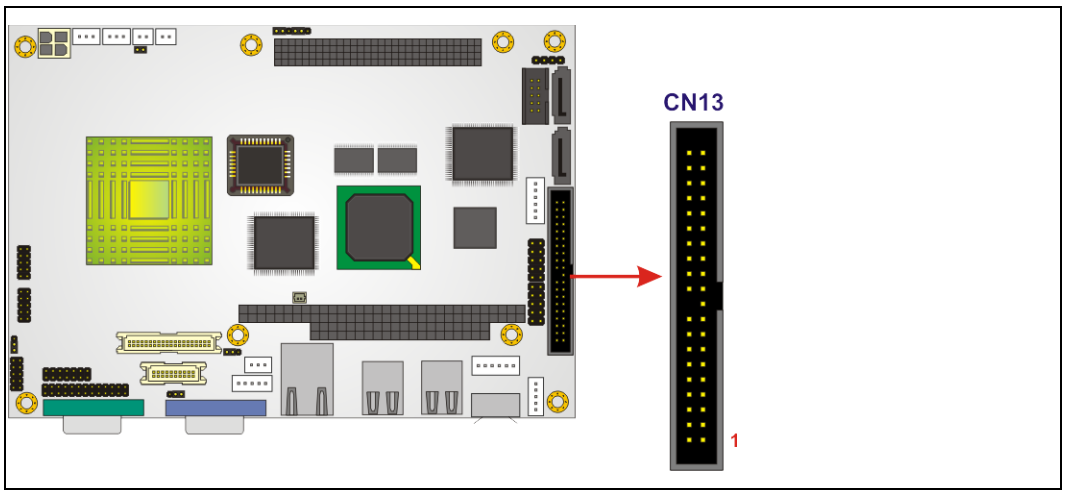
CN Label: **CN13**

CN Type: 44-pin box header (2x22)

CN Location: See **Figure 4-12**

CN Pinouts: See **Table 4-12**

One 44-pin IDE device connector on the NANO-GX supports connectivity to two hard disk drives.



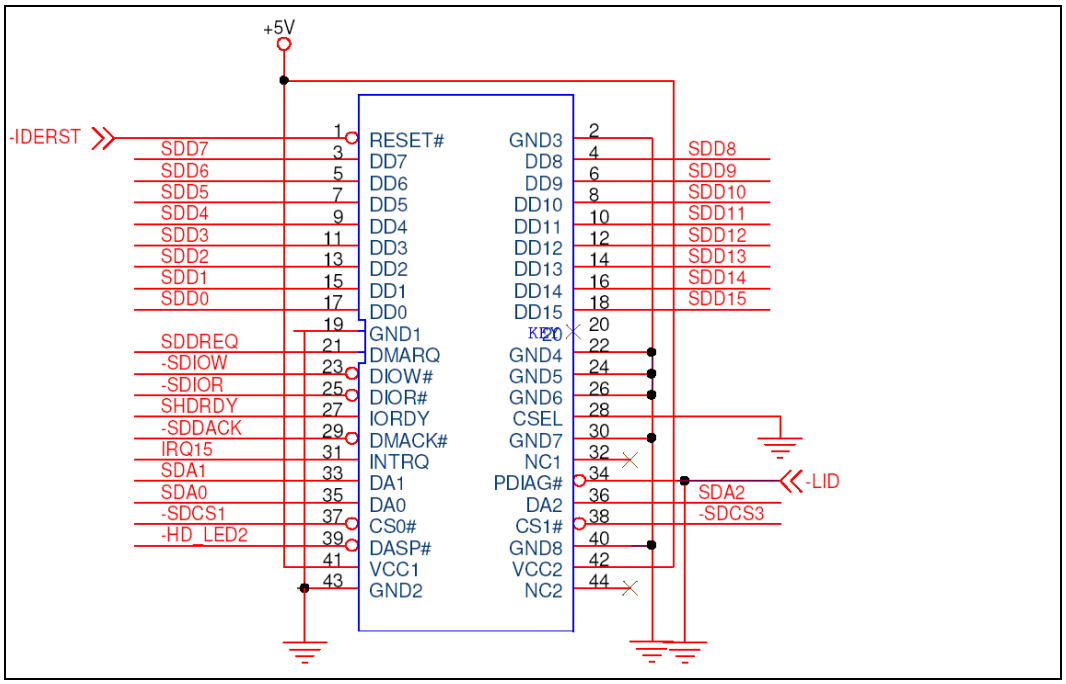


Figure 4-12: IDE Device Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RESET#	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	N/C
21	IDE DRQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	IDE CHRDY	28	GROUND
29	IDE DACK	30	GROUND–DEFAULT
31	INTERRUPT	32	N/C

33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND
41	VCC	42	VCC
43	GROUND	44	N/C

Table 4-12: IDE Connector Pinouts

4.2.11 Infrared Interface Connector (5-pin)

CN Label: **CN32**

CN Type: 5-pin wafer

CN Location: See **Figure 4-13**

CN Pinouts: See **Table 4-13**

The infrared interface connector supports both Serial Infrared (SIR) and Amplitude Shift Key Infrared (ASKIR) interfaces.

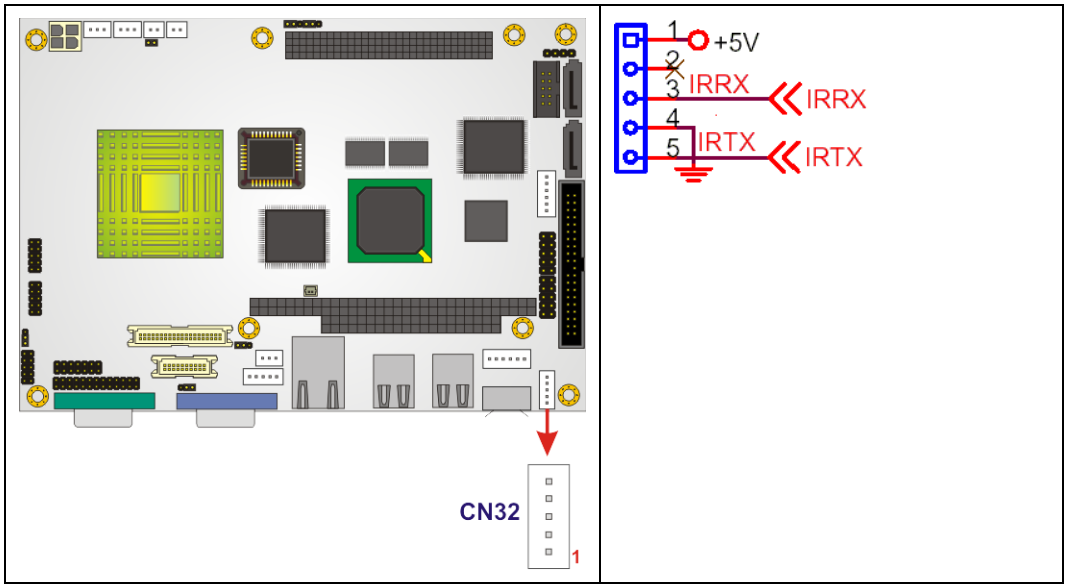


Figure 4-13: Infrared Connector Pinout Locations

PIN NO.	DESCRIPTION
1	VCC5
2	NC
3	IR-RX
4	GND
5	IR-TX

Table 4-13: Infrared Connector Pinouts

4.2.12 Keyboard/Mouse Connector

CN Label: **CN30**

CN Type: 6-pin wafer

CN Location: See **Figure 4-14**

CN Pinouts: See **Table 4-14**

The keyboard and mouse connector can be connected to a standard PS/2 cable or PS/2 Y-cable to add keyboard and mouse functionality to the system.

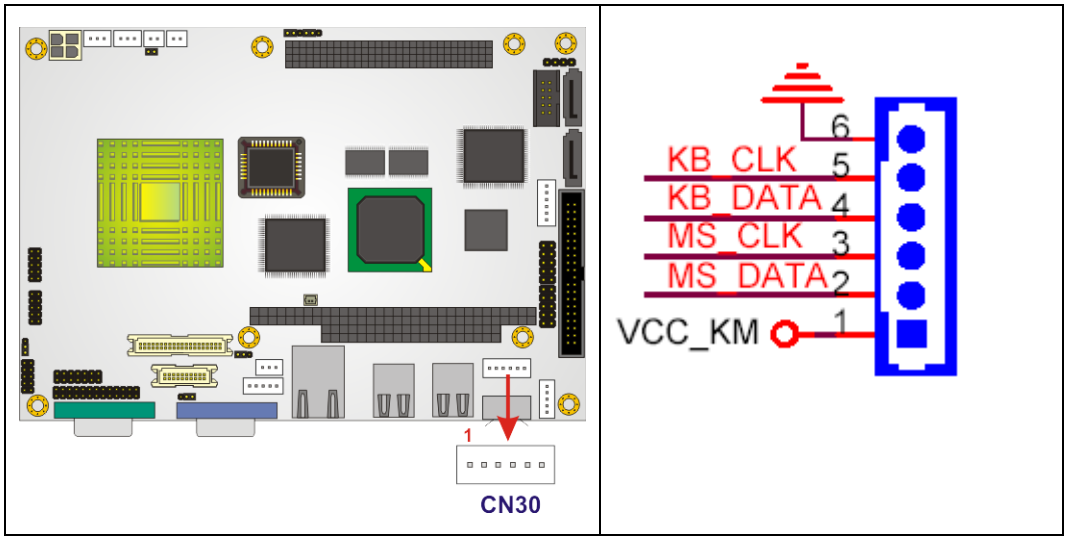


Figure 4-14: Keyboard/Mouse Connector Location

PIN NO.	DESCRIPTION
1	VCC5
2	Mouse DATA
3	Mouse Clock
4	Keyboard DATA
5	Keyboard Clock
6	GROUND

Table 4-14: Keyboard/Mouse Connector Pinouts

4.2.13 Parallel Port Connector

CN Label: **CN20**

CN Type: 26-pin header

CN Location: See **Figure 4-15**

CN Pinouts: See **Table 4-15**

The 26-pin parallel port connector connects to a parallel port connector interface or some other parallel port device such as a printer.

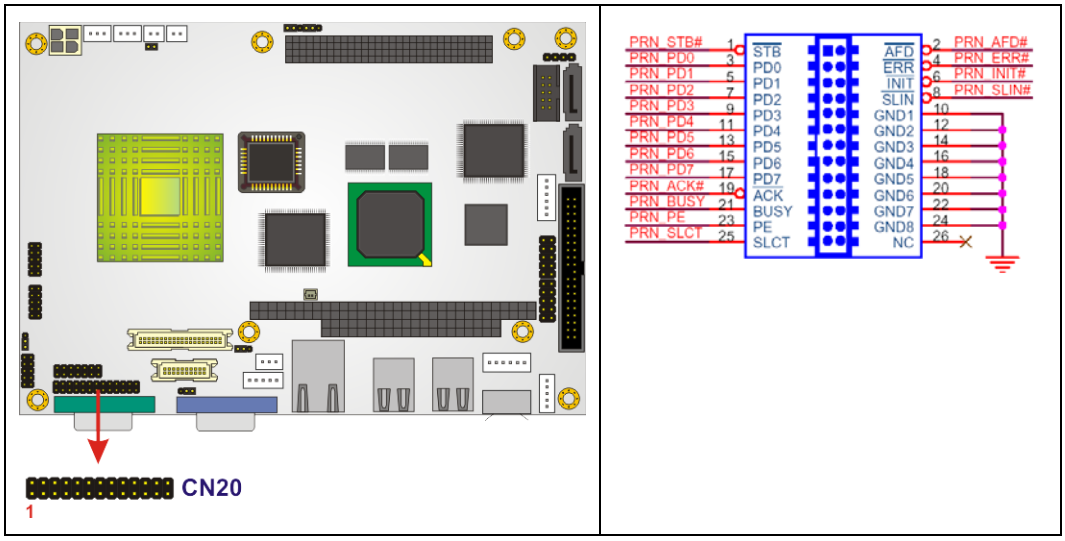


Figure 4-15: Parallel Port Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	PRN_STB#	2	PRN_AFD#
3	PRN_PD0	4	PRN_ERR#
5	PRN_PD1	6	PRN_INIT#
7	PRN_PD2	8	PRN_SLIN#
9	PRN_PD3	10	GND
11	PRN_PD4	12	GND
13	PRN_PD5	14	GND
15	PRN_PD6	16	GND
17	PRN_PD7	18	GND
19	PRN_ACK#	20	GND
21	PRN_BUSY	22	GND
23	PRN_PE	24	GND
25	PRN_SLCT	26	NC

Table 4-15: Parallel Port Connector Pinouts

4.2.14 PC/104-Plus Slot

The NANO-GX features a PC/104-Plus slot for expansion. PC/104-Plus consists of a PC/104 slot and a PCI-104 slot.

The PC/104 slot enables a PC/104 compatible expansion module to be connected to the board. The PCI-104 slot enables a PCI-104 compatible expansion module to be connected to the board.

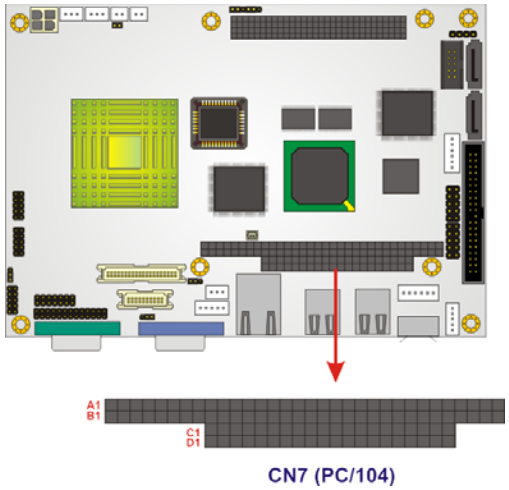
CN Label: **CN7**

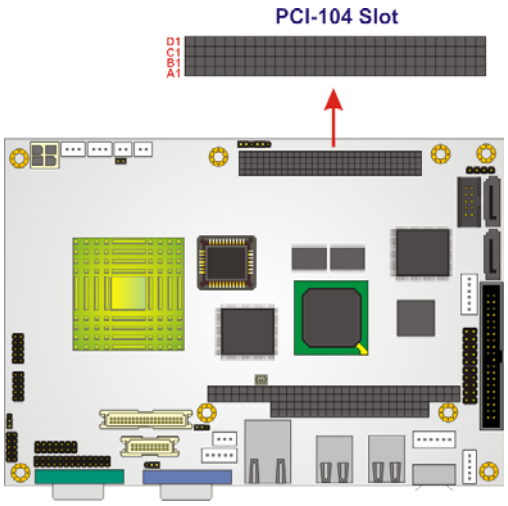
CN Type: 104-pin PC/104 slot, 120-pin PCI-104 slot

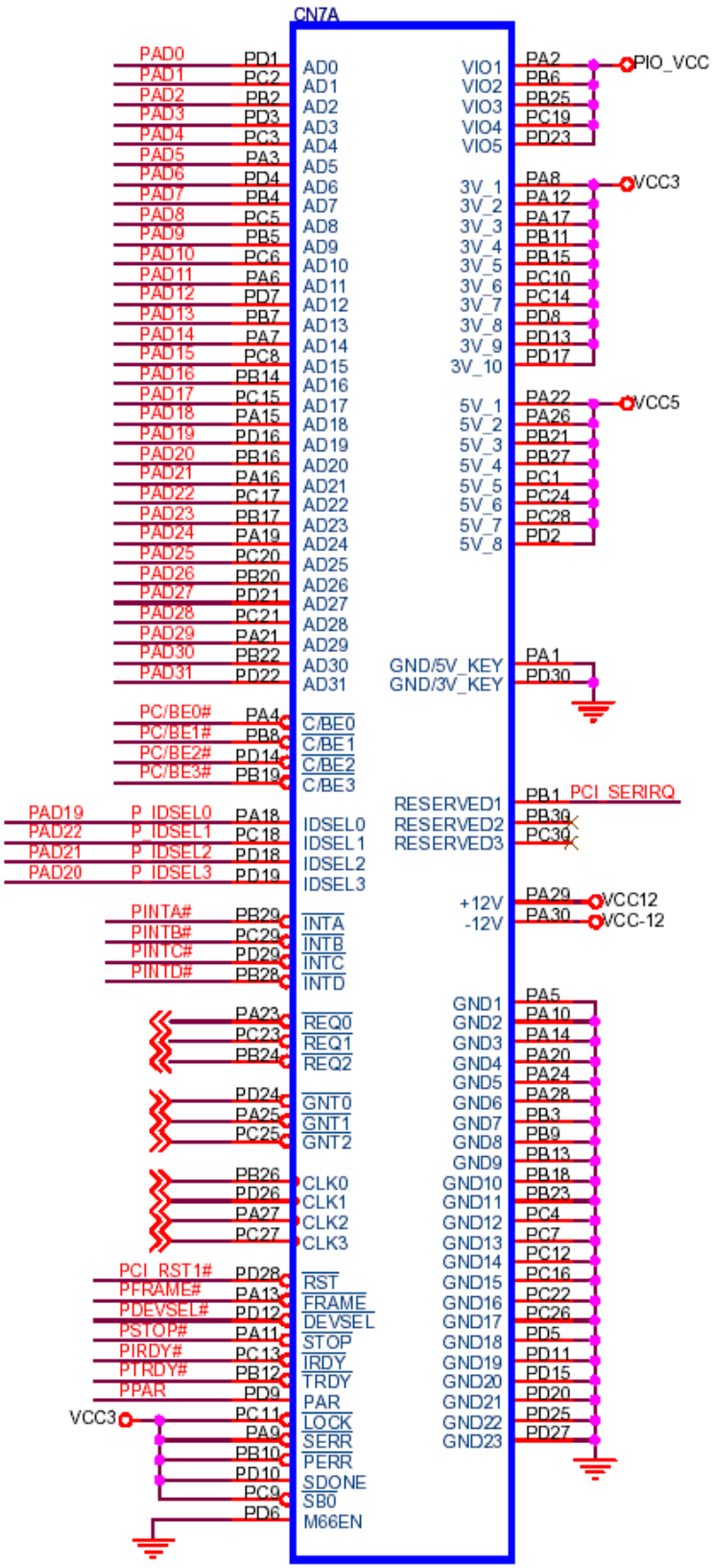
CN Location: See **Figure 4-16**

CN Pinouts: See **Table 4-16** for PC/104 slot pinouts

See **Table 4-17** for PCI-104 slot pinouts


A1
B1
C1
D1
CN7 (PC/104)


PCI-104 Slot
D1
C1
B1
A1


CN7A
PAD0 PD1 AD0
PAD1 PC2 AD1
PAD2 PB2 AD2
PAD3 PD3 AD3
PAD4 PC3 AD4
PAD5 PA3 AD5
PAD6 PD4 AD6
PAD7 PB4 AD7
PAD8 PC5 AD8
PAD9 PB5 AD9
PAD10 PC6 AD10
PAD11 PA6 AD11
PAD12 PD7 AD12
PAD13 PB7 AD13
PAD14 PA7 AD14
PAD15 PC8 AD15
PAD16 PB14 AD16
PAD17 PC15 AD17
PAD18 PA15 AD18
PAD19 PD16 AD19
PAD20 PB16 AD20
PAD21 PA16 AD21
PAD22 PC17 AD22
PAD23 PB17 AD23
PAD24 PA19 AD24
PAD25 PC20 AD25
PAD26 PB20 AD26
PAD27 PD21 AD27
PAD28 PC21 AD28
PAD29 PA21 AD29
PAD30 PB22 AD30
PAD31 PD22 AD31
PC/BE0# PA4 C/BE0
PC/BE1# PB8 C/BE1
PC/BE2# PD14 C/BE2
PC/BE3# PB19 C/BE3
PAD19 P_IDSEL0 PA18 IDSEL0
PAD22 P_IDSEL1 PC18 IDSEL1
PAD21 P_IDSEL2 PD18 IDSEL2
PAD20 P_IDSEL3 PD19 IDSEL3
PINTA# PB29 INTA
PINTB# PC29 INTB
PINTC# PD29 INTC
PINTD# PB28 INTD
PA23 REQ0
PC23 REQ1
PB24 REQ2
PD24 GNT0
PA25 GNT1
PC25 GNT2
PB26 CLK0
PD26 CLK1
PA27 CLK2
PC27 CLK3
PCI_RST1# PD28 RST
PFRAME# PA13 FRAME
PDEVSEL# PD12 DEVSEL
PSTOP# PA11 STOP
PIRDY# PC13 IRDY
PTRDY# PB12 TRDY
PPAR PD9 PAR
VCC3 PC11 LOCK
PA9 SERR
PB10 PERR
PD10 SDONE
PC9 SB0
PD6 M66EN
VIO1 PA2 PIO_VCC
VIO2 PB6
VIO3 PB25
VIO4 PC19
VIO5 PD23
3V_1 PA8 VCC3
3V_2 PA12
3V_3 PA17
3V_4 PB11
3V_5 PB15
3V_6 PC10
3V_7 PC14
3V_8 PD8
3V_9 PD13
3V_10 PD17
5V_1 PA22 VCC5
5V_2 PA26
5V_3 PB21
5V_4 PB27
5V_5 PC1
5V_6 PC24
5V_7 PC28
5V_8 PD2
GND/5V_KEY PA1
GND/3V_KEY PD30
RESERVED1 PB1 PCI_SERIRQ
RESERVED2 PB30
RESERVED3 PC30
+12V PA29 VCC12
-12V PA30 VCC-12
GND1 PA5
GND2 PA10
GND3 PA14
GND4 PA20
GND5 PA24
GND6 PA28
GND7 PB3
GND8 PB9
GND9 PB13
GND10 PB18
GND11 PB23
GND12 PC4
GND13 PC7
GND14 PC12
GND15 PC16
GND16 PC22
GND17 PC26
GND18 PD5
GND19 PD11
GND20 PD15
GND21 PD20
GND22 PD25
GND23 PD27

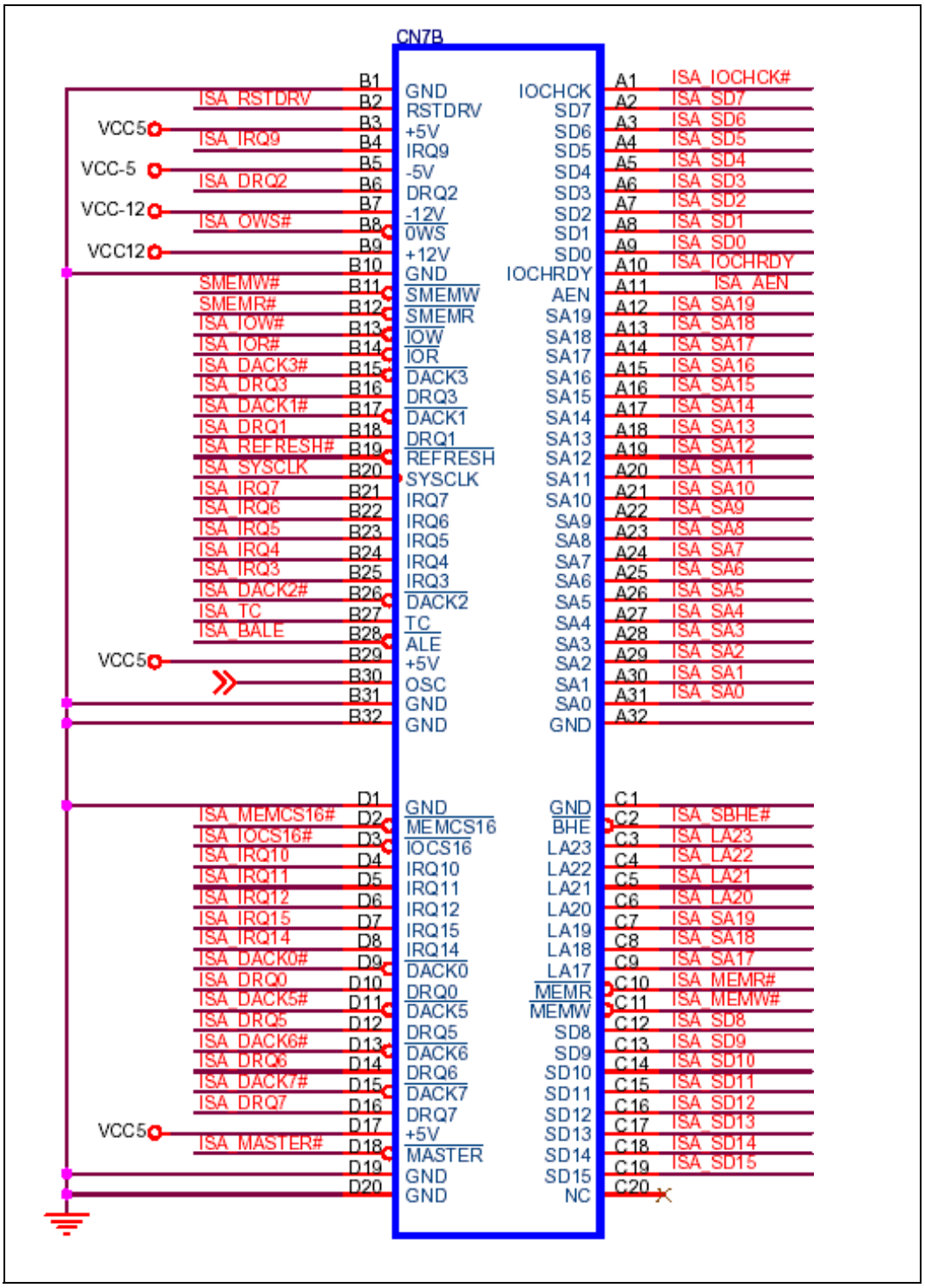


Figure 4-16: PCI/104-Plus Slot Location

Pin No.	Column A	Column B	Column C	Column D
1	IOCHK-	GROUND	GROUND	GROUND
2	SD7	RSTDRV	SBHE-	MCS16-
3	SD6	+5V	SA23	IOCS16-
4	SD5	IRQ9	SA22	IRQ10
5	SD4	-5V	SA21	IRQ11
6	SD3	DREQ2	SA20	IRQ12
7	SD2	-12V	SA19	IRQ15
8	SD1	ZWS-	SA18	IRQ14
9	SD0	+12V	SA17	DACK0-
10	IOCHRDY	GROUND	MEMR-	DREQ0
11	AEN	SMEMW-	MEMW-	DACK5-
12	SA19	SMEMR-	SD8	DRREQ5
13	SA18	IOW-	SD9	DACK6-
14	SA17	IOR-	SD10	DREQ6
15	SA16	DACK3-	SD11	DACK7-
16	SA15	DREQ3	SD12	DREQ7
17	SA14	DACK1-	SD13	+5V
18	SA13	DREQ1	SD14	MASTER-
19	SA12	REFRESH-	SD15	GROUND
20	SA11	ISACLK	NC	GROUND
21	SA10	IRQ7		
22	SA9	IRQ6		
23	SA8	IRQ5		
24	SA7	IRQ4		
25	SA6	IRQ3		
26	SA5	DACK2-		
27	SA4	TC		
28	SA3	BALE		

29	SA2	+5V		
30	SA1	ISA_OSC		
31	SA0	GROUND		
32	GROUND	GROUND		

Table 4-16: PC/104 Slot Connector Pinouts

Pin	Description	Pin	Description	Pin	Description	Pin	Description
A1	GND	B1	SERIRQ#	C1	VCC5	D1	AD0
A2	VI0	B2	AD2	C2	AD1	D2	VCC5
A3	AD5	B3	GND	C3	AD4	D3	AD3
A4	BE0#	B4	AD7	C4	GND	D4	AD6
A5	GND	B5	AD9	C5	AD8	D5	GND
A6	AD11	B6	VIO	C6	AD10	D6	GND
A7	AD14	B7	AD13	C7	GND	D7	AD12
A8	VCC3	B8	BE1#	C8	AD15	D8	VCC3
A9	PULL 3V	B9	GND	C9	PULL 3V	D9	PAR
A10	GND	B10	PULL 3V	C10	VCC3	D10	PULL 3V
A11	STOP#	B11	VCC3	C11	PULL 3V	D11	GND
A12	VCC3	B12	TRDY#	C12	GND	D12	DEVSEL#
A13	FRAME#	B13	GND	C13	IRDY#	D13	VCC3
A14	GND	B14	AD16	C14	VCC3	D14	BE2#
A15	AD18	B15	VCC3	C15	AD17	D15	GND
A16	AD21	B16	AD20	C16	GND	D16	AD19
A17	VCC3	B17	AD23	C17	AD22	D17	VCC3
A18	IDSEL0	B18	GND	C18	IDSEL1	D18	IDSEL2
A19	AD24	B19	BE3#	C19	VIO	D19	IDSEL3
A20	GND	B20	AD26	C20	AD25	D20	GND
A21	AD29	B21	VCC5	C21	AD28	D21	AD27
A22	VCC5	B22	AD30	C22	GND	D22	AD31
A23	REQ0	B23	GND	C23	REQ1	D23	VIO
A24	GND	B24	REQ2	C24	VCC5	D24	GNT0

A25	GNT1	B25	VIO	C25	GNT2	D25	GND
A26	VCC5	B26	CLOCK0	C26	GND	D26	CLOCK1
A27	CLOCK2	B27	VCC5	C27	CLOCK3	D27	GND
A28	GND	B28	INTD#	C28	VCC5	D28	RESET
A29	+12V	B29	INTA#	C29	INTB#	D29	INTC#
A30	-12V	B30	NC	C30	NC	D30	GND

Table 4-17: PCI-104 Slot Connector Pinouts

4.2.15 PC/104 Power Input Connector

CN Label: **CN25**

CN Type: 3-pin wafer (1x3)

CN Location: See **Figure 4-17**

CN Pinouts: See **Table 4-18**

The PC/104 power input connector provides power to the PC/104 expansion module installed on the PC/104 slot.

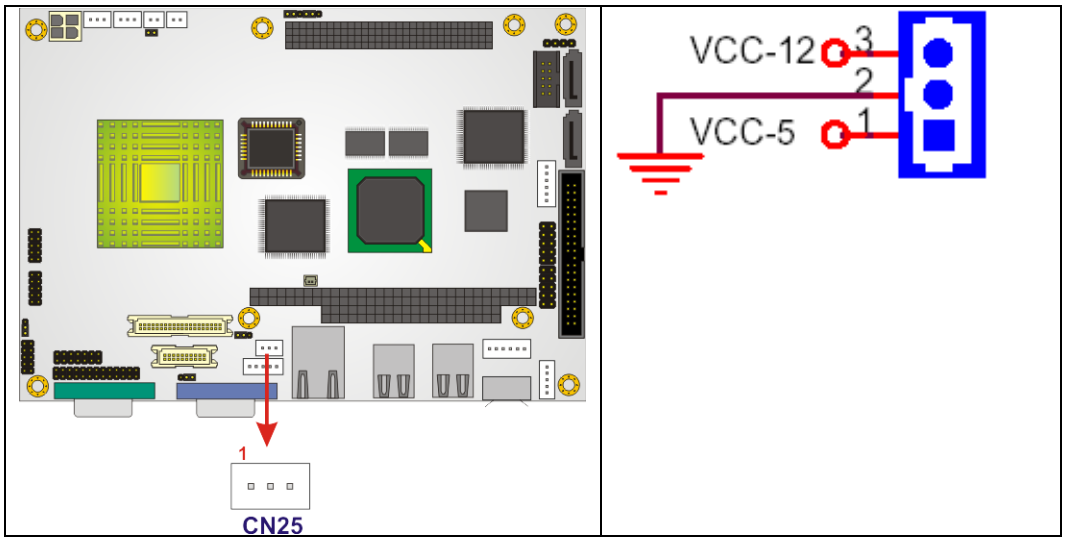


Figure 4-17: PC/104 Power Input Connector Pinouts

PIN NO.	DESCRIPTION
1	-VCC5
2	GROUND
3	- VCC12

Table 4-18: PC/104 Power Input Connector Pinouts

4.2.16 Power and HDD LED Connector

CN Label: **CN12**

CN Type: 6-pin wafer

CN Location: See **Figure 4-15**

CN Pinouts: See **Table 4-15**

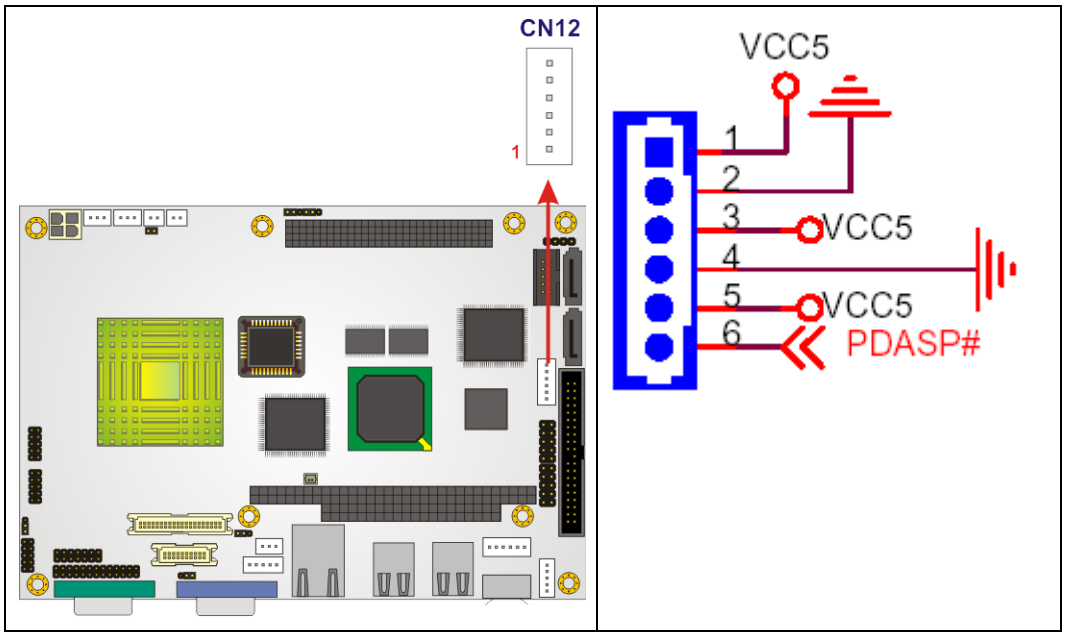


Figure 4-18: Power and HDD LED Connector Location

PIN NO.	DESCRIPTION
1	VCC5
2	GROUND
3	PWRLED+
4	PWRLED-
5	HDD LED+
6	HDD LED-

Table 4-19: Power and HDD LED Connector Pinouts

4.2.17 Reset Button Connector

CN Label: **CN6**

CN Type: 2-pin wafer (1x2)

CN Location: See **Figure 4-19**

CN Pinouts: See **Table 4-20**

The reset button connector is connected to a reset switch on the system chassis to enable users to reboot the system when the system is turned on.

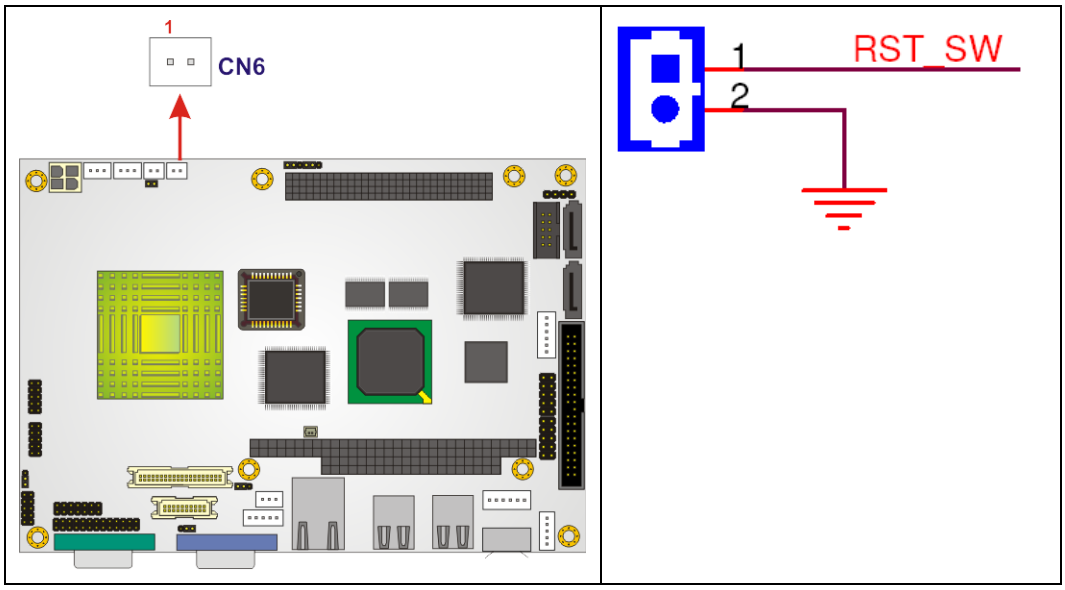


Figure 4-19: Reset Button Connector Locations

PIN NO.	DESCRIPTION
1	Reset button +
2	Reset button -

Table 4-20: Reset Button Connector Pinouts

4.2.18 SATA Drive Connectors

CN Label: **CN10** and **CN11**

CN Type: 7-pin SATA drive connectors

CN Location: See **Figure 4-20**

CN Pinouts: See **Table 4-21**

The two SATA drive connectors are each connected to a first generation SATA drive. First generation SATA drives transfer data at speeds as high as 150Mb/s. The SATA drives can be configured in a RAID configuration.

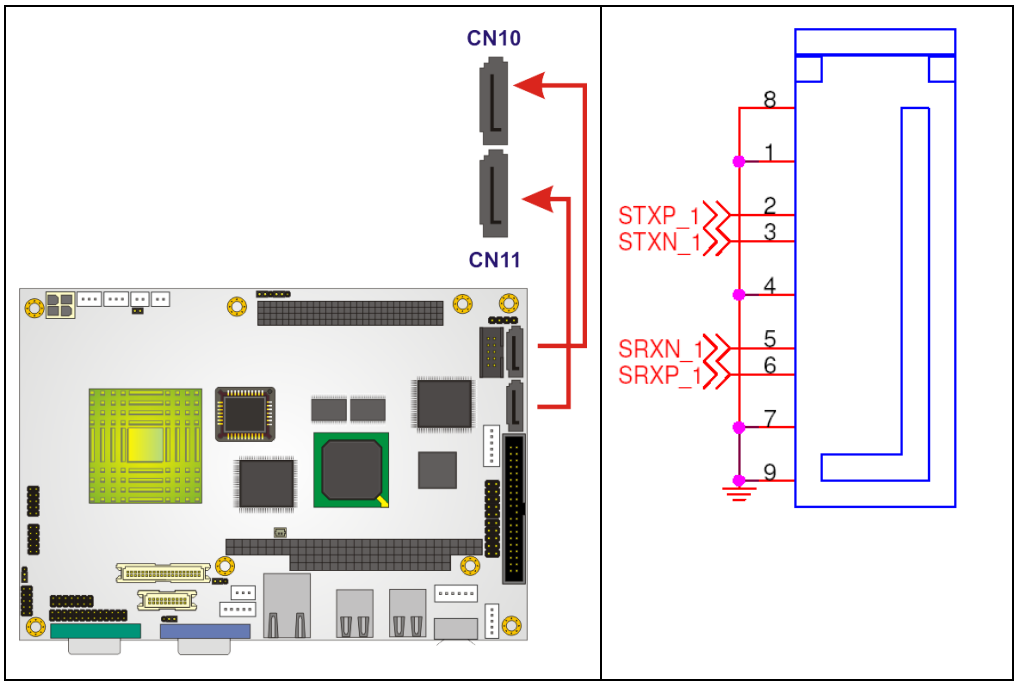


Figure 4-20: SATA Drive Connector Locations

PIN NO.	DESCRIPTION
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

Table 4-21: SATA Drive Connector Pinouts

4.2.19 Serial Port and RS-422 / RS-485 Connector

CN Label:	**CN19**
CN Type:	14-pin header (2x7)
CN Location:	See **Figure 4-21**
CN Pinouts:	See **Table 4-22**

The 14-pin serial port connector connects to the COM 2 serial communications channels. COM2 is a multi function channel. In default mode COM 2 is an RS-232 serial communication channel but, with the JP4 jumper, can be configured as either an RS-422 or RS-485 serial communications channel.

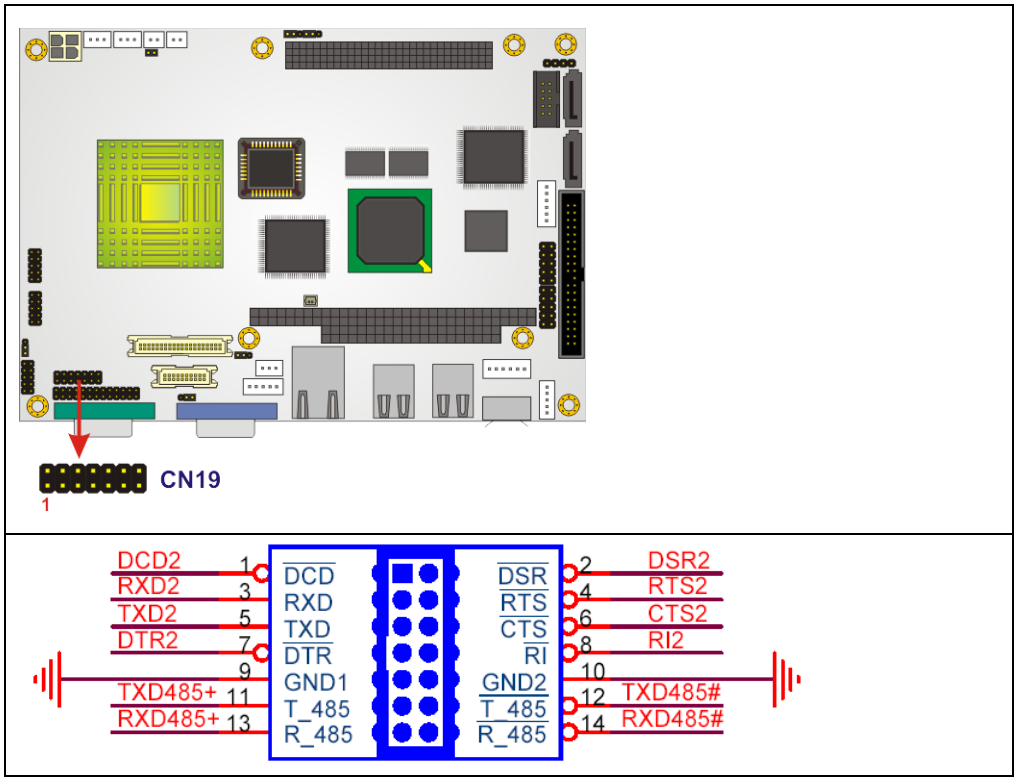


Figure 4-21: Serial and RS-422/485 Port Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GROUND	10	GROUND
11	TXD485+	12	TXD485#
13	RXD485+	14	RXD485#

Table 4-22: Serial and RS-422/RS-485 Port Connector Pinouts

4.2.20 Serial Port Connectors (COM2)

CN Label: **CN14, CN15, CN16, CN17**

CN Type: 10-pin header (2x5)

CN Location: See **Figure 4-22**

CN Pinouts: See **Table 4-23**

The 10-pin serial port connectors provide RS-232 serial communications channels. The COM 2 serial port connectors can be connected to external RS-232 serial port devices.

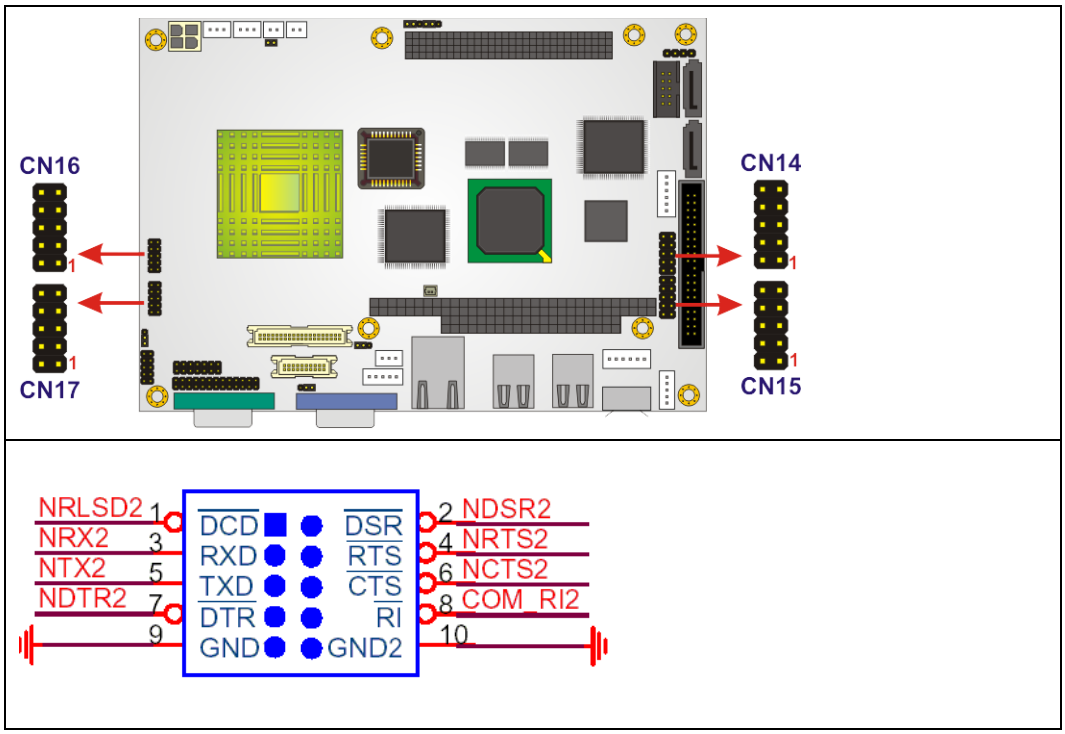


Figure 4-22: COM2 Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Data Carrier Direct (DCD)	2	Data Set Ready (DSR)
3	Receive Data (RXD)	4	Request To Send (RTS)
5	Transmit Data (TXD)	6	Clear To Send (CTS)
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)
9	Ground (GND)	10	Ground (GND)

Table 4-23: COM2 Connector Pinouts

4.2.21 TFT LVDS LCD Connector

CN Label: **CN23**

CN Type: 20-pin crimp connector (2x10)

CN Location: See **Figure 4-23**

CN Pinouts: See **Table 4-24**

The 20-pin LVDS LCD connector can be connected to single channel 18-bit LVDS panel.

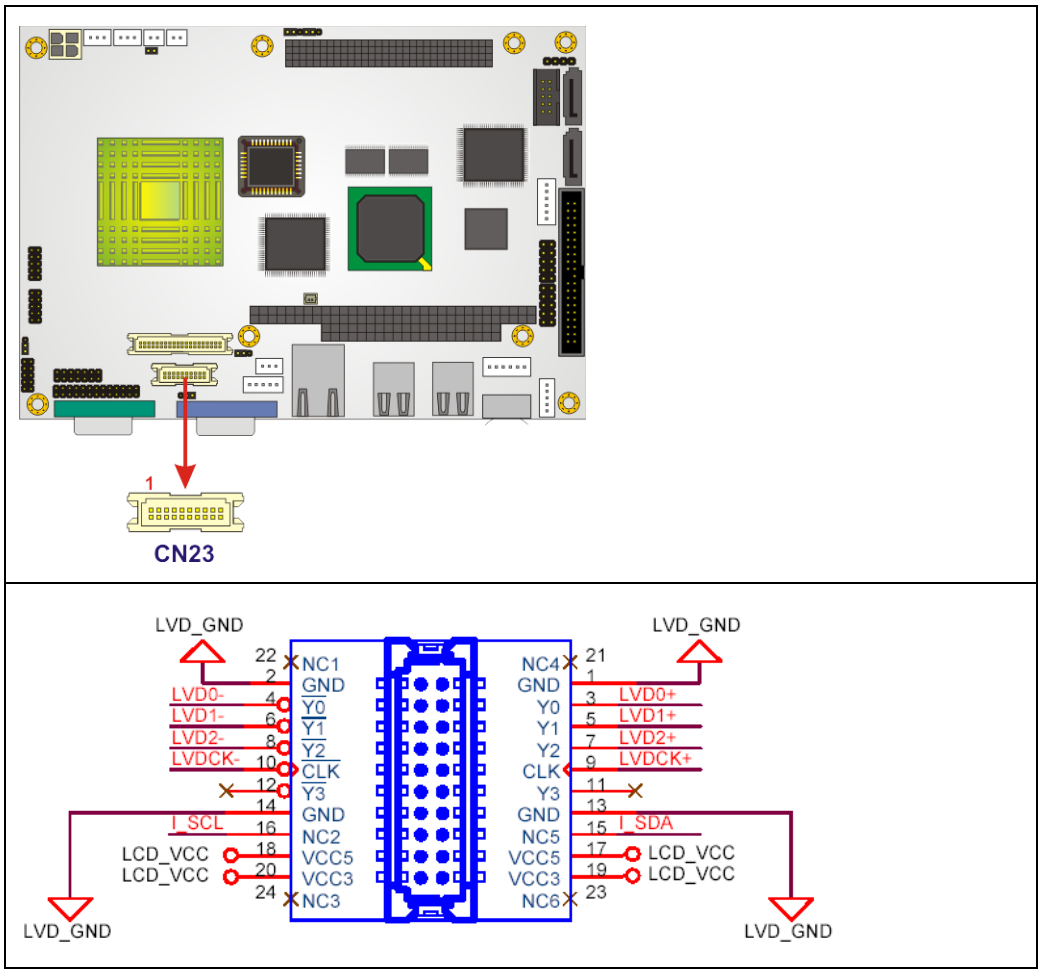


Figure 4-23: LVDS LCD Connector Pinout Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
2	GROUND	1	GROUND
4	LVD_Y0-	3	LVD_Y0+
6	LVD_Y1-	5	LVD_Y1+
8	LVD_Y2-	7	LVD_Y2
10	LVD_CLK-	9	LVD_CLK+
12	NC	11	NC
14	GROUND	13	GROUND
16	NC	15	NC
18	LVD_ VCC	17	LVD_ VCC
20	LVD_ VCC	19	LVD_ VCC

Table 4-24: LVDS LCD Port Connector Pinouts

4.2.22 TFT TTL LCD Connector

CN Label: **CN22**

CN Type: 40-pin crimp (2x20)

CN Location: See **Figure 4-24**

CN Pinouts: See **Table 4-25**

The 40-pin TFT TTL LCD connector can be connected to an LCD panel directly.

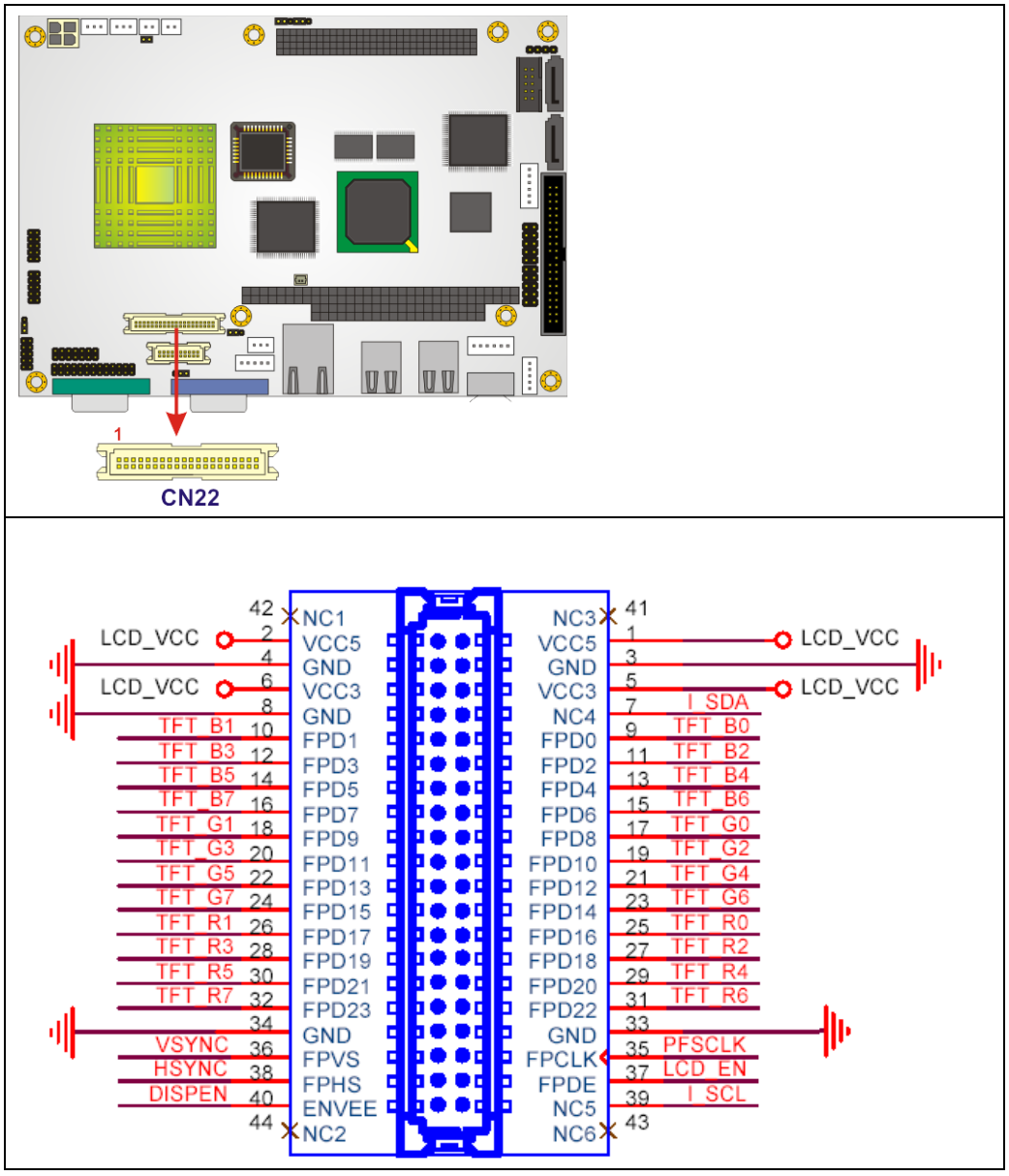


Figure 4-24: TFT TTL LCD Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
2	LCD_VCC	1	LCD_VCC
4	GROUND	3	GROUND
6	LCD_VCC	5	LCD_VCC
8	GROUND	7	NC
10	B1	9	B0

12	B3	11	B2
14	B5	13	B4
16	B7	15	B6
18	G1	17	G0
20	G3	19	G2
22	G5	21	G4
24	G7	23	G6
26	R1	25	R0
28	R3	27	R2
30	R5	29	R4
32	R7	31	R6
34	GROUND	33	GROUND
36	FPVS	35	FPCLK
38	FPHS	37	FPDE
40	FPENVEE	39	NC

Table 4-25: TFT LCD Port Connector Pinouts

4.3 External Interface Connectors

4.3.1 External Interface Connector Overview

Figure 4-25 shows the NANO-GX motherboard external interface connectors. The NANO-GX on-board external interface connectors are listed below and shown in **Figure 4-25**:

- 1 x Ethernet connector
- 1 x Keyboard/Mouse connector
- 1 x Serial communications port
- 2 x USB combo ports
- 1 x VGA port

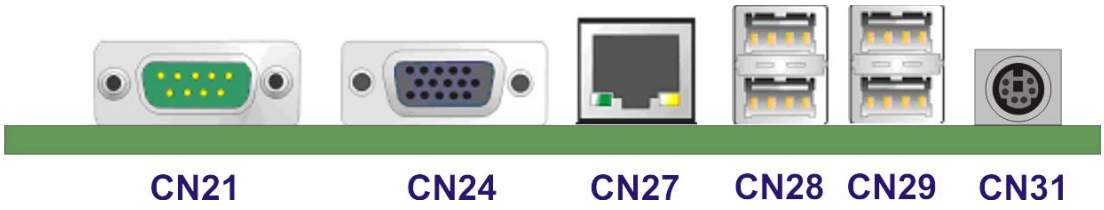


Figure 4-25: NANO-GX On-board External Interface Connectors

4.3.2 Ethernet Connector

CN Label: **CN27**

CN Type: **RJ-45**

CN Location: See **Figure 4-25**

CN Pinouts: See **Table 4-26**

A 10/100 Mbps connection can be made between the Ethernet connector and a Local Area Network (LAN) through a network hub.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	TX-	5	N/C
2	N/C	6	RX-
3	TX-	7	N/C
4	RX+	8	N/C

Table 4-26: Ethernet Connector Pinouts

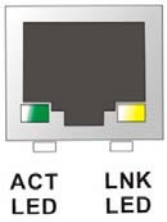


Figure 4-26: Ethernet Connector

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked.

SPEED LED		LINK LED	
Status	**Description**	**Status**	**Description**
GREEN	ON: 100MB OFF: 10MB	YELLOW	ON: Linked Flashing: Activity

Table 4-27: J7 Connector LEDs

4.3.3 PS/2 Keyboard/Mouse Connector

CN Label: **CN31**

CN Type: Mini-DIN 6 PS/2

CN Location: See **Figure 4-25**

CN Pinouts: See **Table 4-28** and **Figure 4-27**

The NANO-GX has a mini-DIN 6 PS/2 connector on the mounting bracket for easy connection to a PS/2 keyboard or PS/2 mouse. The card comes with a cable to convert the mini-DIN 6 PS/2 into two mini-DIN 6 PS/2 connectors for keyboard and mouse connection.

Figure 4-27: Mini-DIN 6 PS/2 Connector

PIN NO.	DESCRIPTION
1	KEYBOARD DATA
2	MOUSE DATA
3	GND
4	VCC
5	KEYBOARD CLOCK
6	MOUSE CLOCK

Table 4-28: Mini-DIN 6 PS/2 Connector

4.3.4 RS-232 Serial Communications Connector

CN Label: **CN21**

CN Type: RS-232 serial connector

CN Location: See **Figure 4-25**

CN Pinouts: See **Table 4-29** and **Figure 4-28**

The RS-232 serial connector provides serial connection in the RS-232 mode.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	DCD1	2	DSR1
3	RX1	4	RTS1
5	TX1	6	CTS1
7	DTR1	8	RI1
9	GND		

Table 4-29: RS-232 Serial Communications Pinouts

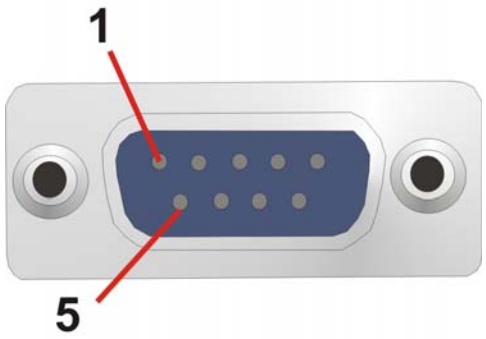


Figure 4-28: COM1 Pinout Locations

4.3.5 USB Combo Ports

CN Label: **CN28, CN29**

CN Type: USB Combo ports

CN Location: See **Figure 4-25**

CN Pinouts: See **Table 4-30**

The USB combo port provides connectivity to additional USB devices through an adapter cable. Various adapters may come with USB ports on a slot bracket or ports that can be attached to D-SUB openings on a chassis. USB devices connect directly to the USB connectors on the rear panel.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	5V	2	GND
3	USBP2N	4	USBP3P
5	USBP2P	6	USBP3N
7	GND	8	5V

Table 4-30: J6 Connector Pinouts

4.3.6 VGA Connector

CN Label: **CN24**

CN Type: HD-D-sub 15 female connector

CN Location: See **Figure 4-25**

CN Pinouts: See **Figure 4-29** and **Table 4-31**

The standard 15-pin female VGA connector connects to a CRT or LCD monitor.

PIN	DESCRIPTION	PIN	DESCRIPTION	PIN	DESCRIPTION
1	RED	6	GROUND	11	NC
2	GREEN	7	GROUND	12	DDCDAT
3	BLUE	8	GROUND	13	HSYNC
4	NC	9	NC	14	VSYNC
5	GROUND	10	GROUND	15	DDCCLK

Table 4-31: VGA1 Connector Pinouts

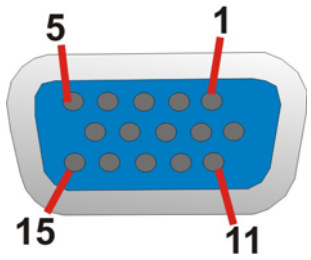


Figure 4-29: VGA1 Connector

Chapter

5

Installation

CHAPTER OVERVIEW

This chapter describes the installation precautions and procedures for the NANO-GX. Detailed instructions for the configuration and installation are included:

- SODIMM
- CF card
- Jumper configurations
- Internal cable connections
- External peripheral device connections

5.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the NANO-GX may result in permanent damage to NANO-GX and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the NANO-GX. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the NANO-GX, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***:- Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring the NANO-GX, place it on an antic-static pad. This reduces the possibility of ESD damaging the NANO-GX.
- ***Only handle the edges of the PCB***:-: When handling the PCB, hold the PCB by the edges.

5.2 Installation Considerations

NOTE:

The following installation notices and installation considerations should be read and understood before the NANO-GX is installed. All installation notices pertaining to the installation of NANO-GX should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the NANO-GX and injury to the person installing the motherboard.

5.2.1 Installation Notices

WARNING:

The installation instructions described in this manual should be carefully followed in order to prevent damage to the NANO-GX, NANO-GX components and injury to the user.

Before and during the installation please **DO** the following:

- **Read the user manual**:
  - The user manual provides a complete description of the NANO-GX installation instructions and configuration options.
- **Wear an electrostatic discharge cuff (ESD)**:
  - Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- **Place the NANO-GX on an antistatic pad**:
  - When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- **Turn all power to the NANO-GX off**:

- When working with the NANO-GX, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the NANO-GX **DO NOT:**

- Remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- Use the product before verifying all the cables and power connectors are properly connected.
- Allow screws to come in contact with the PCB circuit, connector pins, or its components.

5.2.2 Installation Checklist

The following checklist is provided to ensure the NANO-GX is properly installed.

- All the items in the packing list are present
- A compatible memory module is properly inserted into the slot
- The CF Type I or CF Type II card is properly installed into the CF socket
- The jumpers have been properly configured
- The NANO-GX is inserted into a chassis with adequate ventilation
- The correct power supply is being used
- The following devices are properly connected
  - Primary and secondary IDE device
  - SATA drives
  - Keyboard and mouse cable
  - Audio kit
  - Power supply
  - USB cable
  - Serial port cable
  - Parallel port cable
- The following external peripheral devices are properly connected to the chassis:
  - VGA screen
  - Keyboard
  - Mouse

- RS-232 serial communications device
- Parallel port

5.2.3 SODIMM Installation and CF Card Installation

5.2.3.1 SODIMM Installation

WARNING:

Using incorrectly specified SODIMM may cause permanently damage the NANO-GX. Please make sure the purchased SODIMM complies with the memory specifications of the NANO-GX. SODIMM specifications compliant with the NANO-GX are listed in **Chapter 2**.

To install a SODIMM into a SODIMM socket, please follow the steps below and refer **Figure 5-1**.

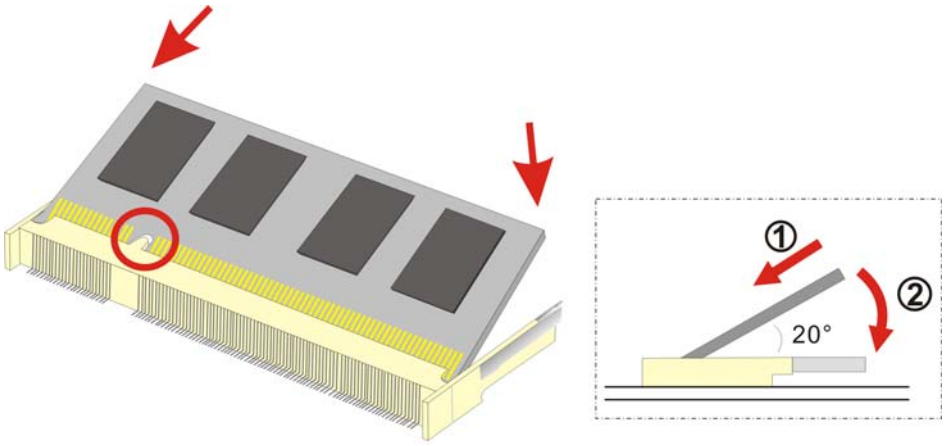


Figure 5-1: SODIMM Installation

Step 1: **Locate the SODIMM socket**. Place the NANO-GX on an anti-static pad with the solder side facing up.

Step 2: **Align the SODIMM with the socket**. The SODIMM must be oriented in such a way that the notch in the middle of the SODIMM must be aligned with the plastic bridge in the socket.

Step 3: **Insert the SODIMM**. Push the SODIMM chip into the socket at an angle. (See **Figure 5-1**)

Step 4: **Open the SODIMM socket arms**. Gently pull the arms of the SODIMM socket out and push the rear of the SODIMM down. (See **Figure 5-1**)

Step 5: **Secure the SODIMM**. Release the arms on the SODIMM socket. They clip into place and secure the SODIMM in the socket.

5.2.4 CF Card Installation

NOTE:

The NANO-GX can support both CF Type I cards and CF Type II cards. For the complete specifications of the supported CF cards please refer to **Chapter 2**.

To install the a CF card (Type 1 or Type 2) onto the NANO-GX, please follow the steps below:

Step 1: **Locate the CF card socket**. Place the NANO-GX on an anti-static pad with the solder side facing up. Locate the CF card.

Step 2: **Align the CF card**. Make sure the CF card is properly aligned with the CF socket.

Step 3: **Insert the CF card**. Gently insert the CF card into the socket making sure the socket pins are properly inserted into the socket. See **Figure 5-2**.

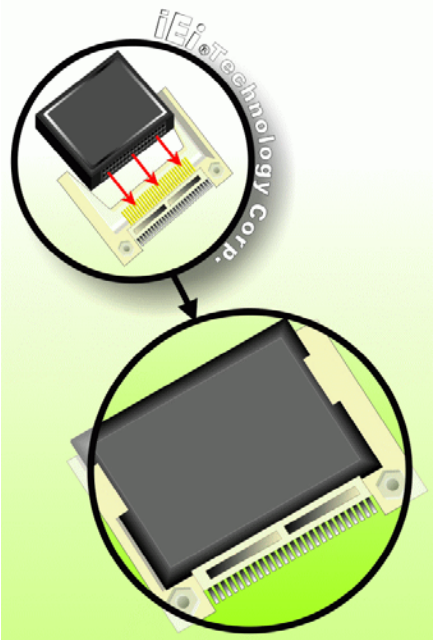
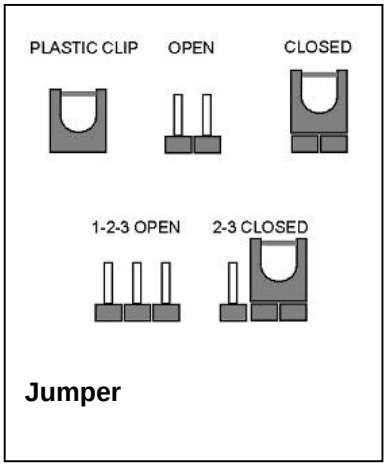


Figure 5-2: CF Card Installation

5.3 Jumper Settings

NOTE:

A jumper is a metal bridge that is used to close an electrical circuit. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.



Jumper

Before the NANO-GX is installed in the system, the jumpers must be set in accordance with the desired configuration. The jumpers on the NANO-GX are listed in **Table 5-1**.

Description	Label	Type
AT/ATX Power Mode Select	**JP2**	2-pin header
COM1/2 Port RI and Voltage Select (Optional)	**JP6**	10-pin header
CRT/LCD Mode Select	**JP3**	3-pin header
LCD Panel (LVDS/TTL) Voltage select	**JP7**	3-pin header
LCD Panel Shift Clock Setting	**JP5**	3-pin header
PC104 Plus VIO Voltage select jumper & SERIRQ Select	**JP1**	6-pin header
RS422/RS485 Select	**JP4**	3-pin header

Table 5-1: Jumpers

5.3.1 AT/ATX Power Mode Select

Jumper Label: **JP2**

Jumper Type: 2-pin header

Jumper Settings: See **Table 5-2**

Jumper Location: See **Figure 5-3**

The **AT Power Mode Select** jumper specifies the systems power mode as AT or ATX. AT Power Select jumper settings are shown in **Table 5-2**.

JP2	Description	
Short	Use AT power	Default
Open	Use ATX power	

Table 5-2: AT Power Mode Select Jumper Settings

The location of the AT Power Select jumper is shown in Figure 5-3 below.

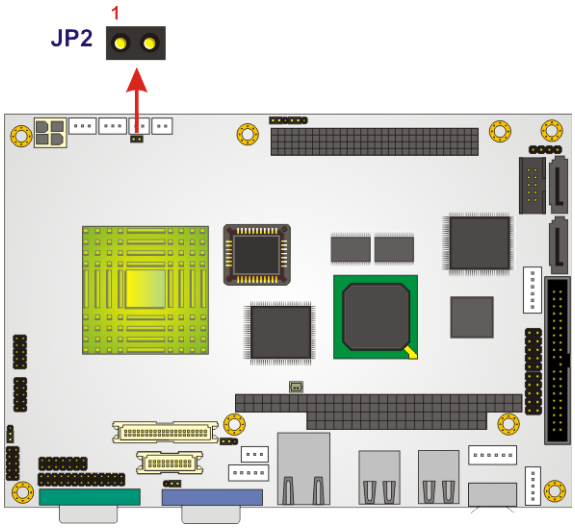


Figure 5-3: AT Power Mode Select Jumper Pinout Location

5.3.2 COM1/2 Port RI and Voltage Select (*Optional*)

Jumper Label: **JP6**

Jumper Type: 10-pin header

Jumper Settings: See **Table 5-3**

Jumper Location: See **Figure 5-5**

The **COM 1/2 Port RI and Voltage Select** jumper configures pin 9 on COM 1 and COM 2 as either a +5V, +12V power source or as a ring-in (RI) line. The jumper selection options are shown in **Table 5-3**. The jumper location is shown in **Figure 5-4**.

JP6	Description	
Short 1 – 3	COM 1 RI Pin use +12V	
Short 3 – 5	COM 1 RI Pin use +5V	
Short 7 – 9	COM 1 RI Pin use RI	Default
Short 2 – 4	COM 2 RI Pin use +12V	
Short 4 – 6	COM 2 RI Pin use +5V	
Short 8 – 10	COM 2 RI Pin use RI	Default

Table 5-3: COM 1/2 RI and Voltage Select Jumper Settings

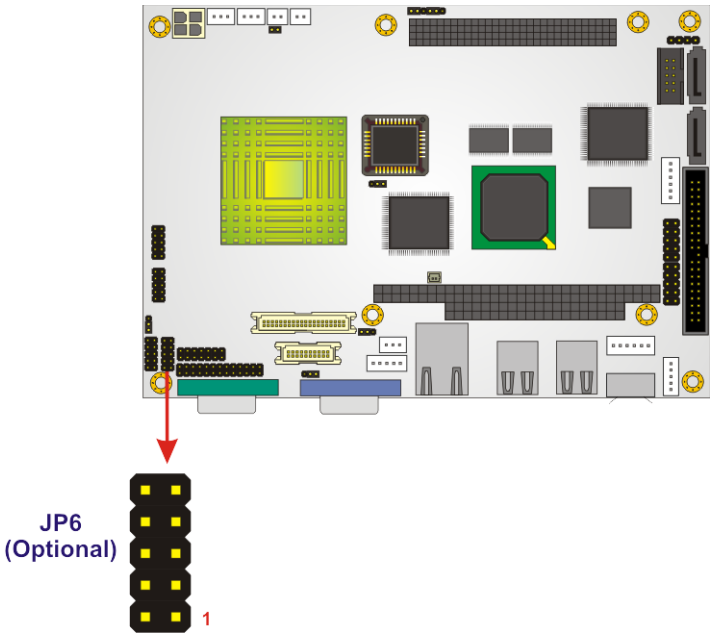


Figure 5-4: COM 1/2 RI and Voltage Select Jumper Pinout Location

5.3.3 CRT/LCD Mode Select

Jumper Label: **JP3**

Jumper Type: 3-pin header

Jumper Settings: See **Table 5-4**

Jumper Location: See **Figure 5-5**

The **CRT/LCD Mode Select** jumper allows the video mode of the NANO-GX to be selected. The CRT/LCD Mode Select jumper settings are shown in **Table 5-4**.

JP3	Description	
1-2	LCD MODE	
2-3	CRT MODE	Default

Table 5-4: CRT/LCD Mode Select Jumper Settings

The CRT/LCD Mode Select jumper location is shown in **Figure 5-5**.

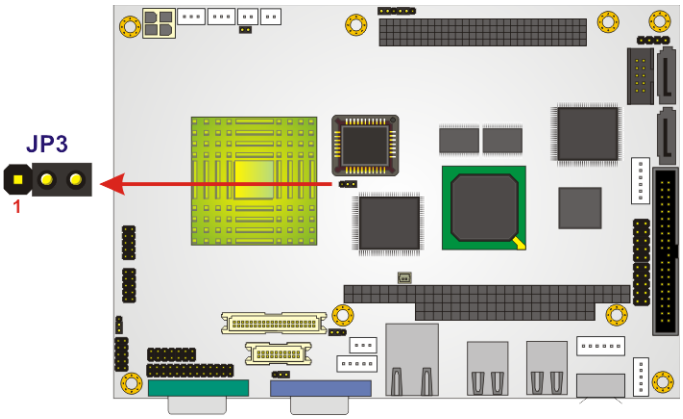


Figure 5-5: CRT/LCD Mode Select Jumper Pinout Location

5.3.4 LCD Panel (LVDS/TTL) Voltage Select

WARNING:

Permanent damage to the screen and NANO-GX may occur if the wrong voltage is selected with this jumper. Please refer to the user guide that cam with the monitor to select the correct voltage.

Jumper Label:	**JP7**
Jumper Type:	3-pin header
Jumper Settings:	See **Table 5-5**
Jumper Location:	See **Figure 5-6**

The **LCD Panel (LVDS/TTL) Voltage Select** jumper allows the LVDS screen voltage to be set. The jumper settings are shown in **Table 5-5**.

JP7	Description	
1-2	+3.3V LVDS	Default
2-3	+5V LVDS	

Table 5-5: LVDS Voltage Selection Jumper Settings

The **LCD Panel (LVDS/TTL) Voltage Select** jumper location. is shown in **Figure 5-6**.

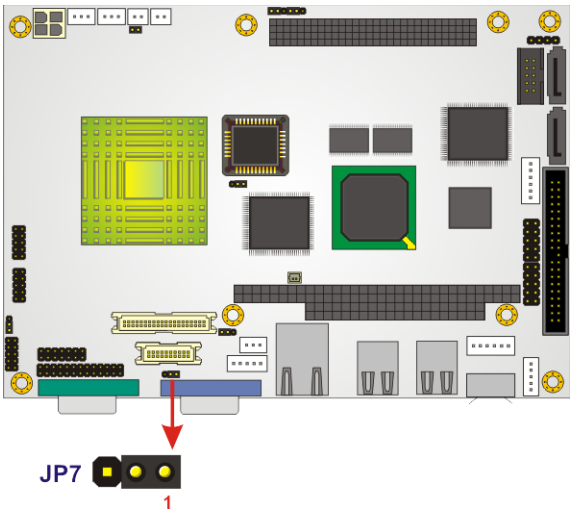


Figure 5-6: LCD Panel (LVDS/TTL) Voltage Select Jumper Pinout Location

5.3.5 LCD Panel Shift Clock Jumper

Jumper Label:	**JP5**
Jumper Type:	3-pin header
Jumper Settings:	See **Table 5-6**
Jumper Location:	See **Figure 5-7**

The JP5 jumper sets the LCD panel shift clock.

JP5	Description	
Short 1-2	Normal Output	Default
Short 2-3	Invert Output	

Table 5-6: LCD Panel Shift Clock Jumper Settings

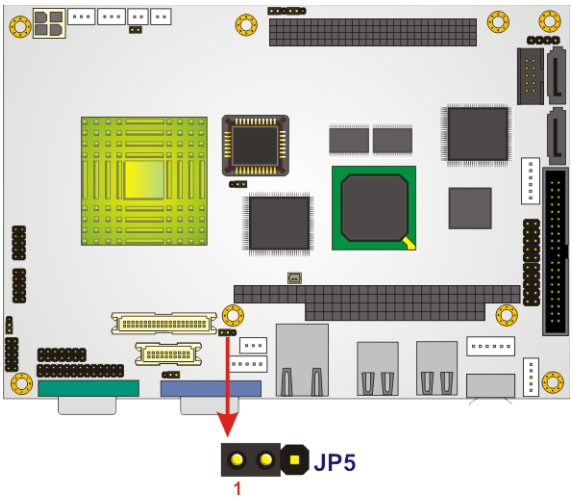


Figure 5-7: LCD Panel Shift Clock Jumper Pinout Location

5.3.6 PC/104-Plus VIO Voltage Select Jumper & SERIRQ Select

Jumper Label:	**JP1**
Jumper Type:	6-pin header
Jumper Settings:	See **Table 5-7**
Jumper Location:	See **Figure 5-8**

The JP1 jumper sets the voltage to the PC/104 connector and to reserve IRQ addresses for PCMCIA devices.

NOTE:

Serial IRQ can only work properly if PCMCIA supports Serial IRQ signal.

JP1	Description	
1-2	PC104 Plus VIO output voltage select 5V	
2-3	PC104 Plus VIO output voltage select 3.3V	
5-6 (short)	SERIRQ Enable	Default
5-6 (open)	SERIRQ Disable	

Table 5-7: PC/104-Plus VIO Voltage Select Jumper & SERIRQ Select Jumper Settings

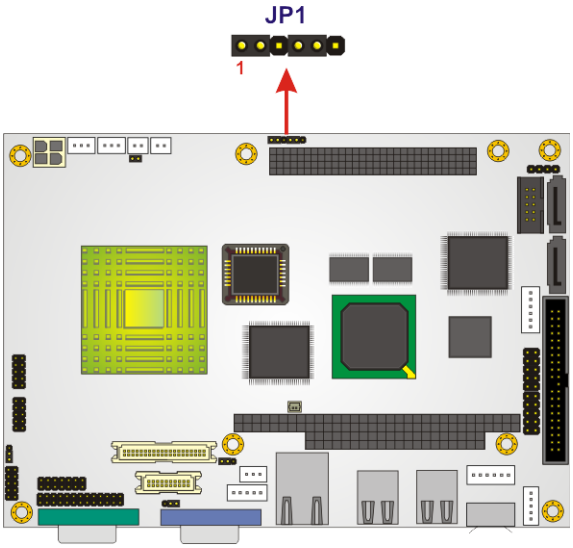


Figure 5-8: PC/104-Plus VIO Voltage Select Jumper & SERIRQ Select Jumper Pinout Location

5.3.7 RS-422/485 Serial Port Select Jumper

Jumper Label:	**JP4**
Jumper Type:	3-pin header
Jumper Settings:	See **Table 5-8**
Jumper Location:	See **Figure 5-9**

The **RS-422/485 Serial Port Select** jumper configures the serial port connector as an RS-422 serial port or as an RS-485 serial port. The RS-422/485 Serial Port Select jumper selection options are shown in **Table 5-8**.

JP4	Description	
1 – 2	UART-2 RxD Signal connect to RS-422	Default
2 – 3	UART-2 RxD Signal connect to RS-485	

Table 5-8: RS-422/485 Serial Port Select Jumper Settings

The RS-422/485 Serial Port Select jumper location is shown in **Figure 5-9** below.

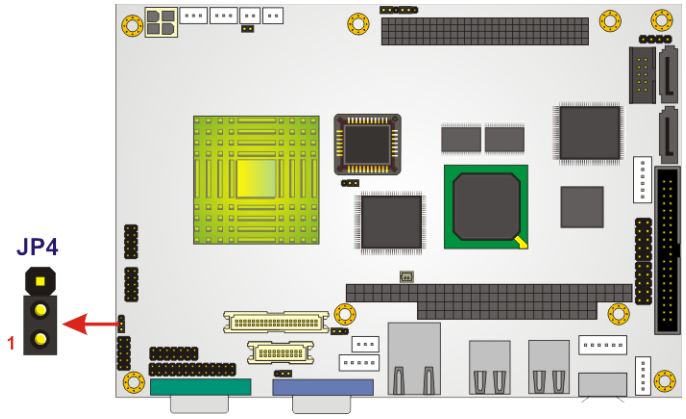


Figure 5-9: RS-422/485 Serial Port Select Jumper Pinout Location

5.4 Chassis Installation

5.4.1 Airflow

WARNING:

Airflow is critical to the cooling of the CPU and other onboard components. The chassis in which the NANO-GX must have air vents to allow cool air to move into the system and hot air to move out.

The NANO-GX must be installed in a chassis with ventilation holes on the sides allowing airflow to travel through the heat sink surface. In a system with an individual power supply unit, the cooling fan of a power supply can also help generate airflow through the board surface.

5.4.2 NANO-GX Installation

To install the NANO-GX motherboard into the chassis please refer to the reference material that came with the chassis.

5.5 Internal Peripheral Device Connections

5.5.1 Peripheral Device Cables

The cables listed in **Table 5-9** are shipped with the NANO-GX.

Quantity	Type
1	ATA33 flat cable
2	RS-232 cables
1	KB/MS Y cable
2	SATA drive cables
1	SATA drive power cable

Table 5-9: IEI Provided Cables

5.5.2 ATA Flat Cable Connection

The ATA 33 flat cable connects the NANO-GX to one or two IDE devices. To connect an IDE HDD to the NANO-GX please follow the instructions below.

Step 1: **Locate the IDE connector**. The location/s of the IDE device connector/s is/are shown in **Chapter 3**.

Step 2: **Insert the connector**. Connect the IDE cable connector to the onboard connector. See **Figure 5-10**. A key on the front of the cable connector ensures it can only be inserted in one direction.

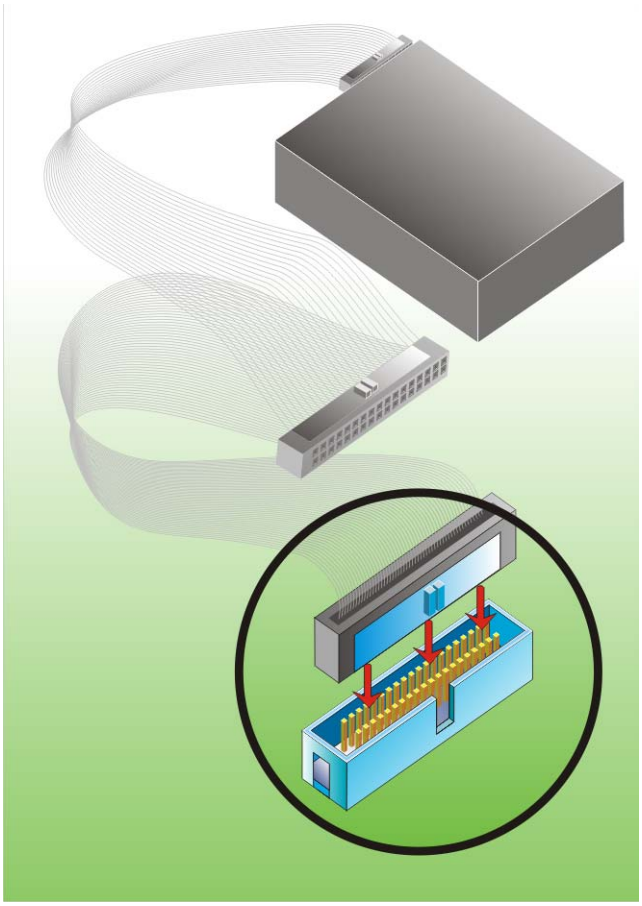


Figure 5-10: IDE Cable Connection

Step 3: **Connect the cable to an IDE device**. Connect the two connectors on the other side of the cable to one or two IDE devices. Make sure that pin 1 on the cable corresponds to pin 1 on the connector

5.5.3 Keyboard/Mouse Y-cable Connector

The NANO-GX is shipped with a keyboard/mouse Y-cable connector. The keyboard/mouse Y-cable connector connects to a keyboard/mouse connector on the NANO-GX and branches into two cables that are each connected to a PS/2 connector, one for a mouse and one for a keyboard. To connect the keyboard/mouse Y-cable connector please follow the steps below.

Step 1: **Locate the connector**. The location of the keyboard/mouse Y-cable connector is shown in **Chapter 3**.

Step 2: **Align the connectors**. Correctly align pin 1 on the cable connector with pin 1 on the NANO-GX keyboard/mouse connector. See **Figure 5-11**.

Step 3: **Insert the cable connectors** Once the cable connector is properly aligned with the keyboard/mouse connector on the NANO-GX, connect the cable connector to the onboard connectors. See **Figure 5-11**.

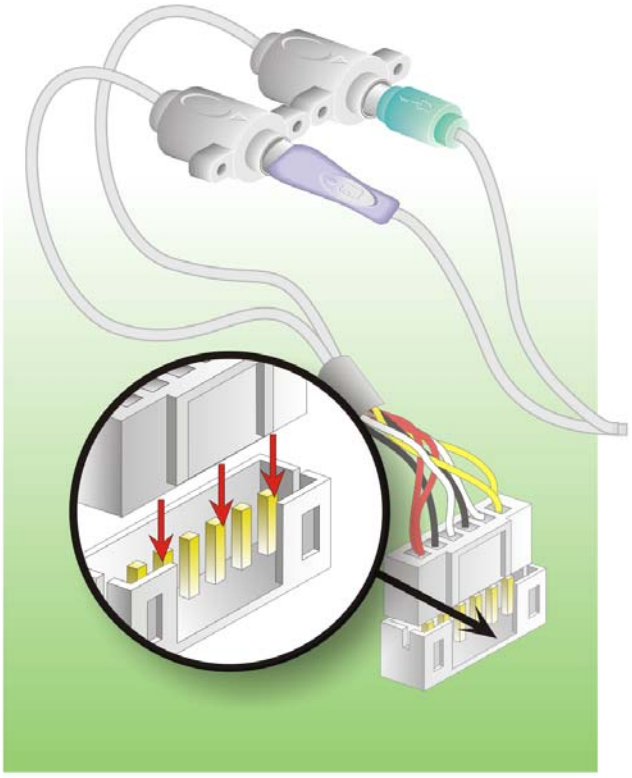


Figure 5-11: Keyboard/mouse Y-cable Connection

Step 4: **Attach PS/2 connectors to the chassis**. The keyboard/mouse Y-cable connector is connected to two PS/2 connectors. To secure the PS/2 connectors to the chassis please refer to the installation instructions that came with the chassis.

Step 5: **Connect the keyboard and mouse**. Once the PS/2 connectors are connected to the chassis, a keyboard and mouse can each be connected to one of the PS/2 connectors. The keyboard PS/2 connector and mouse PS/2 connector are both marked. Please make sure the keyboard and mouse are connected to the correct PS/2 connector.

5.5.4 Dual RS-232 Cable Connection

The dual RS-232 cable consists of two connectors attached to two independent cables. Each cable is then attached to a D-sub 9 male connector that is mounted onto a bracket. To install the dual RS-232 cable, please follow the steps below.

Step 1: **Locate the connectors**. The locations of the RS-232 connectors are shown in **Chapter 3**.

Step 2: **Insert the cable connectors**. Insert one connector into each serial port box headers. See **Figure 5-12**. A key on the front of the cable connectors ensures the connector can only be installed in one direction.

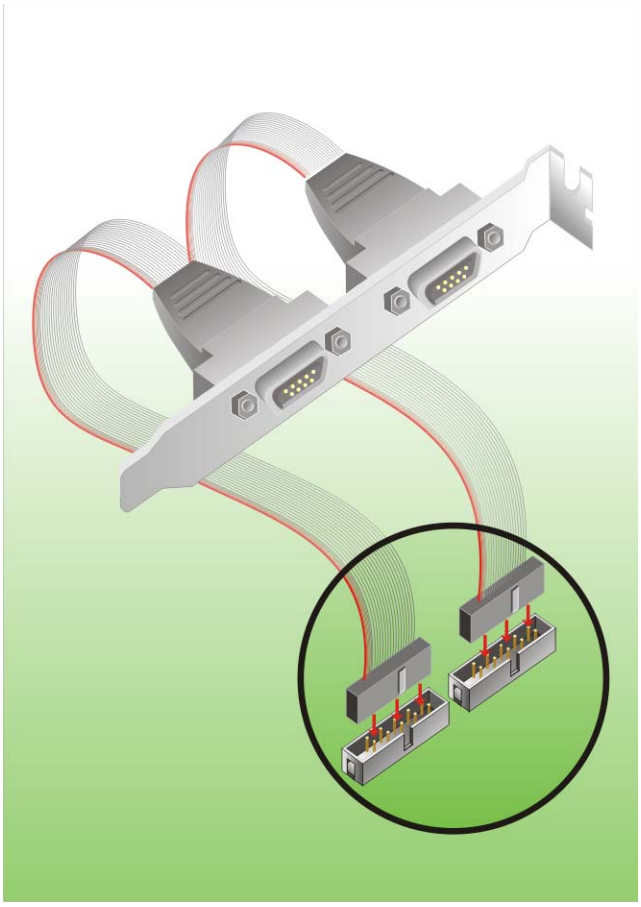


Figure 5-12: Dual RS-232 Cable Installation

Step 3: **Secure the bracket**. The dual RS-232 connector has two D-sub 9 male connectors secured on a bracket. To secure the bracket to the chassis please refer to the reference material that came with the chassis.

5.5.5 SATA Drive Connection

The NANO-GX is shipped with two SATA drive cables and one SATA drive power cable. To connect the SATA drives to the connectors, please follow the steps below.

Step 1: **Locate the connectors**. The locations of the SATA drive connectors are shown in **Chapter 3**.

Step 2: **Insert the cable connector**. Press the clip on the connector at the end of the SATA cable and insert the cable connector into the onboard SATA drive connector. See **Figure 5-13**.

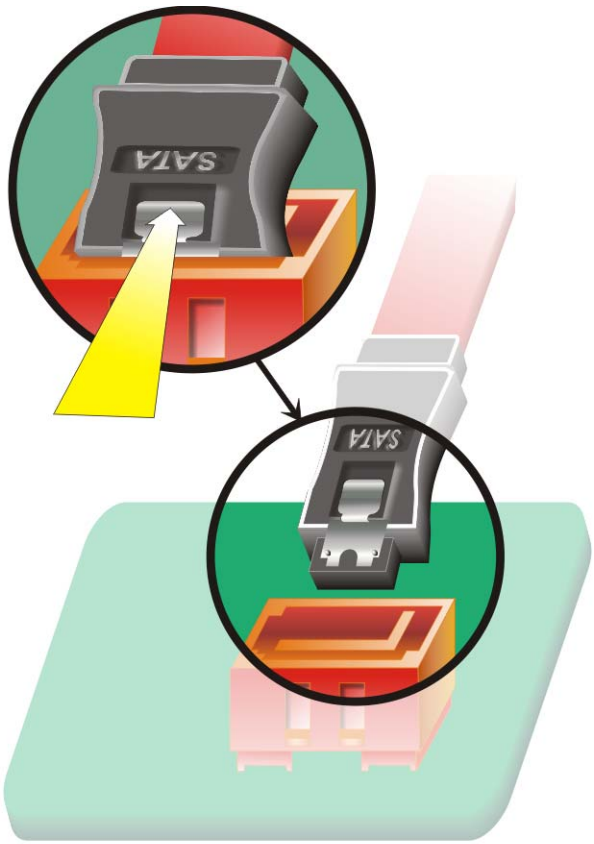


Figure 5-13: SATA Drive Cable Connection

Step 3: **Connect the cable to the SATA disk**. Connect the connector on the other end of the cable to the connector at the back of the SATA drive. See **Figure 5-14**.

Step 4: **Connect the SATA power cable**. Connect the SATA power connector to the back of the SATA drive. See **Figure 5-14**.

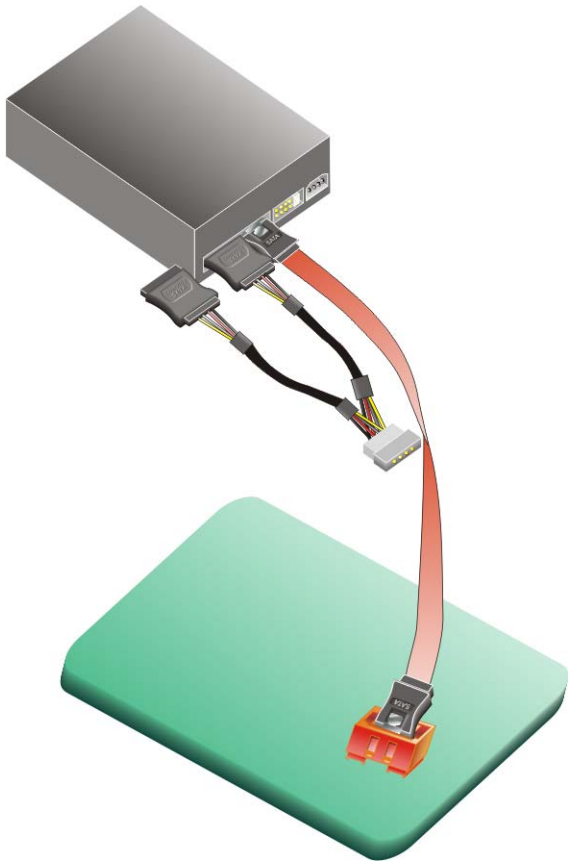


Figure 5-14: SATA Power Drive Connection

5.5.6 Audio Kit Installation

The Audio Kit that came with the NANO-GX connects to the 10-pin audio connector on the NANO-GX. The audio kit consists of three audio jacks. One audio jack, Mic In, connects to a microphone. The remaining two audio jacks, Line-In and Line-Out, connect to two speakers. To install the audio kit, please refer to the steps below:

Step 1: **Locate the audio connector**. The location of the 10-pin audio connector is shown in **Chapter 3**.

Step 2: **Align pin 1**. Align pin 1 on the onboard connector with pin 1 on the audio kit connector. Pin 1 on the audio kit connector is indicated with a white dot. See **Figure 5-15**.

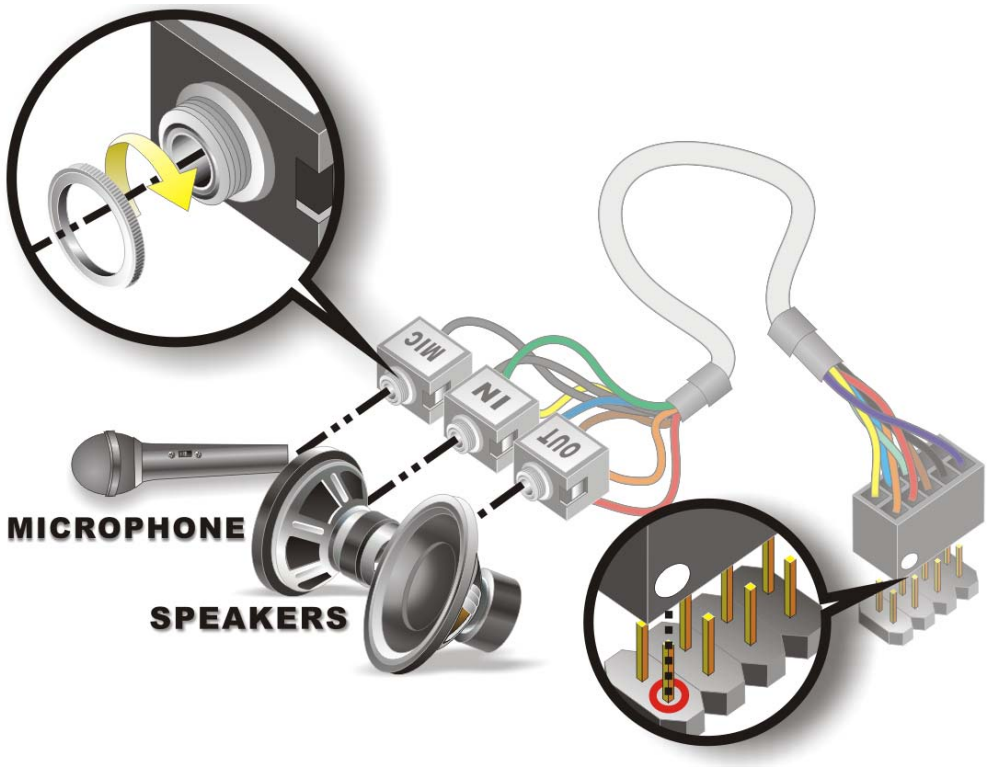


Figure 5-15: Audio Kit Connection

Step 3: **Connect the cable to an IDE device**. Connect the two connectors on the other side of the cable to one or two IDE devices. Make sure that pin 1 on the cable corresponds to pin 1 on the connector

5.6 External Peripheral Interface Connection

The following external peripheral devices can be connected to the external peripheral interface connectors.

- Serial port devices
- USB devices
- VGA monitors
- Parallel port devices
- RJ-45 Ethernet cable connectors
- Mouse and keyboard

To install these devices, connect the corresponding cable connector from the actual device to the corresponding NANO-GX external peripheral interface connector making sure the pins are properly aligned.

Chapter

6

AWARD BIOS Setup

6.1 Introduction

A licensed copy of Phoenix Award BIOS is preprogrammed into the ROM BIOS. The BIOS setup program allows users to modify the basic system configuration. This chapter describes how to access the BIOS setup program and the configuration options that may be changed.

6.1.1 Starting Setup

The Phoenix Award BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **DELETE** key as soon as the system is turned on or
2. Press the **DELETE** key when the "**Press Del to enter SETUP**" message appears on the screen.

If the message disappears, restart the computer and try again.

6.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the **PAGEUP** and **PAGEDOWN** keys to change entries, press **F1** for help and press **ESC** to quit. Navigation keys are shown below.

Key	Function
Up arrow	Move to the item above
Down arrow	Move to the item below
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
+/Page up	Increase the numeric value or make changes
-/Page down	Decrease the numeric value or make changes
Esc	Main Menu – Quit and do not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu

F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2	Item help
F5	Previous values for the page menu items
F6	Fail-safe defaults for the current page menu items
F7	Optimized defaults for the current page menu items
F9	Menu in BIOS
F10	Save changes and Exit BIOS

Table 6-1: BIOS Navigation Keys

6.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

6.1.4 Unable to Reboot After Configuration Changes

If the system cannot be booted after changes are made, restore the CMOS defaults. To restore CMOS defaults, follow these steps:

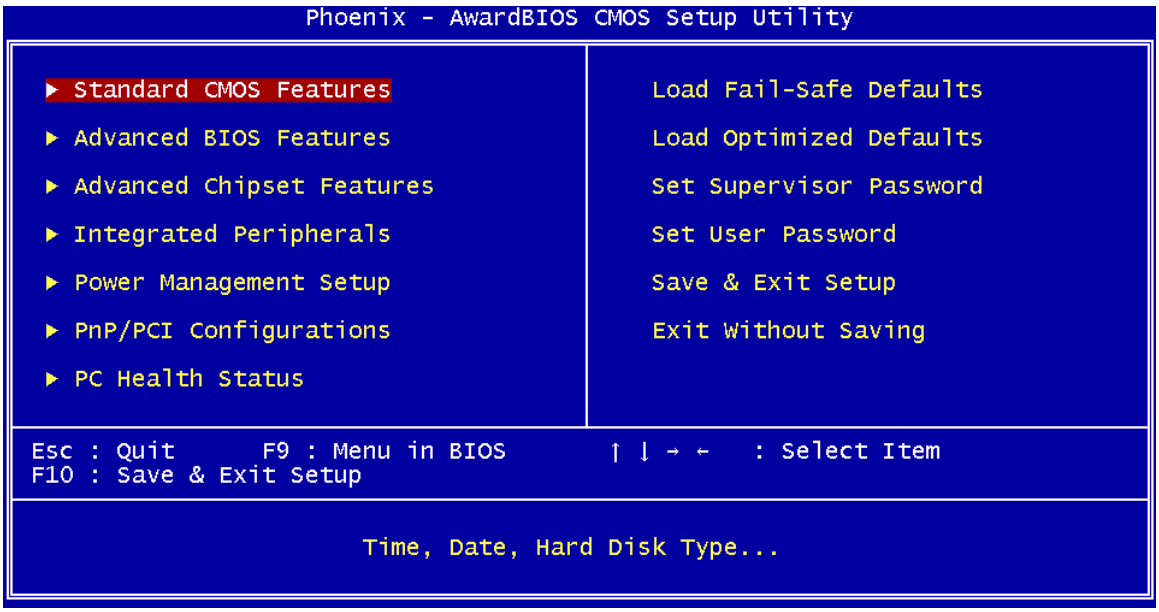
Step 1: Unplug the battery connector.

Step 2: Remove the battery.

Step 3: Plug in the battery connector.

6.1.5 Main BIOS Menu

Once the BIOS opens, the **Main Menu** (**BIOS Menu 1**) appears.



BIOS Menu 1: Award BIOS CMOS Setup Utility

NOTE:

The following sections will completely describe the menus listed below and the configuration options available to users.

The following menu options are seen in **BIOS** Menu 1.

- **Standard CMOS Features**: Changes the basic system configuration.
- **Advanced BIOS Features**: Changes the advanced system settings.
- **Advanced Chipset Features**: Changes the chipset configuration features.
- **Integrated Peripherals**: Changes the settings for integrated peripherals.
- **Power Management Setup**: Configures power saving options.
- **PnP/PCI Configurations**: Changes the advanced PCI/PnP settings.
- **PC Health Status**: Monitors essential system parameters.

The following user configurable options are also available in **BIOS Menu 1**:

➔ **Load Fail-Safe Defaults**

Use the **Load Fail-Safe Defaults** option to load failsafe default values for each BIOS parameter in the setup menus. Press **F6** for this operation on any page.

➔ **Load Optimized Defaults**

Use the **Load Optimized Defaults** option to load optimal default values for each BIOS parameter in the setup menus. Press **F7** for this operation on any page.

➔ **Set Supervisor Password**

Use the **Set Supervisor Password** option to set the supervisor password. By default, no supervisor password is set. To install a supervisor password, select this field and enter the password. After this option is selected, a red dialogue box appears with "**Enter Password:** ". Type the password and press **ENTER**. Retype the original password into the "**Confirm Password:** " dialogue box and press **ENTER**. To disable the password, simply press **ENTER** in the "**Enter Password:** " dialogue box, then press any key in the "**Password Disabled !!!**" dialogue box.

➔ **Set User Password**

Use the **Set User Password** option to set the supervisor password. By default no user password is set. To install a user password, select this field and enter the password. After this option is selected, a red dialogue box appears with "**Enter Password:** ". Type the password and press **ENTER**. Retype the original password into the "**Confirm Password:** " dialogue box and press **ENTER**. To disable the password, simply press **ENTER** in the "**Enter Password:** " dialogue box, then press any key in the "**Password Disabled !!!**" dialogue box.

➔ **Save & Exit Setup**

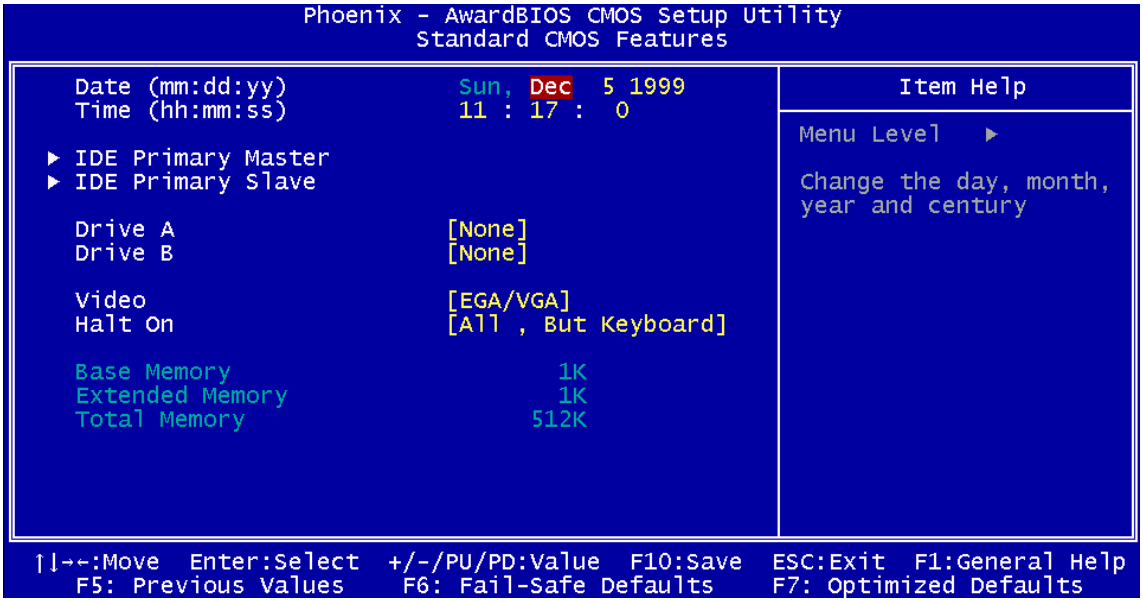
Use the **Save & Exit Setup** option to save any configuration changes made and exit the BIOS menus.

➔ **Exit Without Saving**

Use the **Exit Without Saving** option to exit the BIOS menus without saving any configuration changes.

6.2 Standard CMOS Features

Use the **Standard CMOS Features** BIOS menu (**BIOS Menu 2**) to set basic BIOS configuration options.


Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features
Date (mm:dd:yy) Sun, Dec 5 1999
Time (hh:mm:ss) 11 : 17 : 0
IDE Primary Master
IDE Primary Slave
Drive A [None]
Drive B [None]
Video [EGA/VGA]
Halt On [All , But Keyboard]
Base Memory 1K
Extended Memory 1K
Total Memory 512K
Item Help
Menu Level ▶
Change the day, month, year and century
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

BIOS Menu 2: Standard CMOS Features

➔ **Date [Day mm:dd:yyyy]**

Use the **Date** option to set the system date

➔ **Time [hh/mm/ss]**

Use the **Time** option to set the system time.

➔ **IDE Master and IDE Slave**

When entering setup, BIOS auto detects the presence of IDE devices. The **Standard CMOS Features** menu shows the status of the auto detected IDE devices. The following IDE devices are detected and shown in the **Standard CMOS Features** menu:

- IDE Primary Master
- IDE Primary Slave

IDE device configurations are changed or set in the IDE Configuration menu (**BIOS Menu 3**). If an IDE device is detected, and one of the above listed two BIOS configuration options is selected, the IDE configuration options shown in **Section 6.2.1** appear.

➔ **Drive A/B [None]**

Use the **Drive A/B** configuration to specify the floppy drive type installed in the system. The floppy drive configuration options are:

- None (DEFAULT)
- 360K, 5.25 in.
- 1.2M, 5.25 in.
- 720K, 3.5 in.
- 1.44M, 3.5in
- 2.88M, 3.5 in.

➔ **Video**

Use the **Video** option to select the CRT screen type the system connects to. The video configuration options are:

- EGA/VGA (DEFAULT)
- CGA 40
- CGA 80
- MONO

➔ **Halt On [All, But Keyboard]**

Use the **Halt On** option to specify what errors detected during the power up process stop the system.

➔	**All Errors**		Whenever BIOS detects a non-fatal error the system is stopped and the user prompted.
➔	**No Errors**		The system boot is not stopped for any errors that may be detected.
➔	**All, But Keyboard**	(DEFAULT)	The system boot does not stop for a keyboard error; it stops for all other errors.
➔	**All, But Diskette**		The system boot does not stop for a disk error; it stops for all other errors.
➔	**All, But Disk/Key**		The system boot does not stop for a keyboard or a disk error; it stops for all other errors.

➔ **Base Memory:**

The **Base Memory** is NOT user configurable. The POST determines the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed, or 640K for systems with 640K or more memory installed.

➔ **Extended Memory**

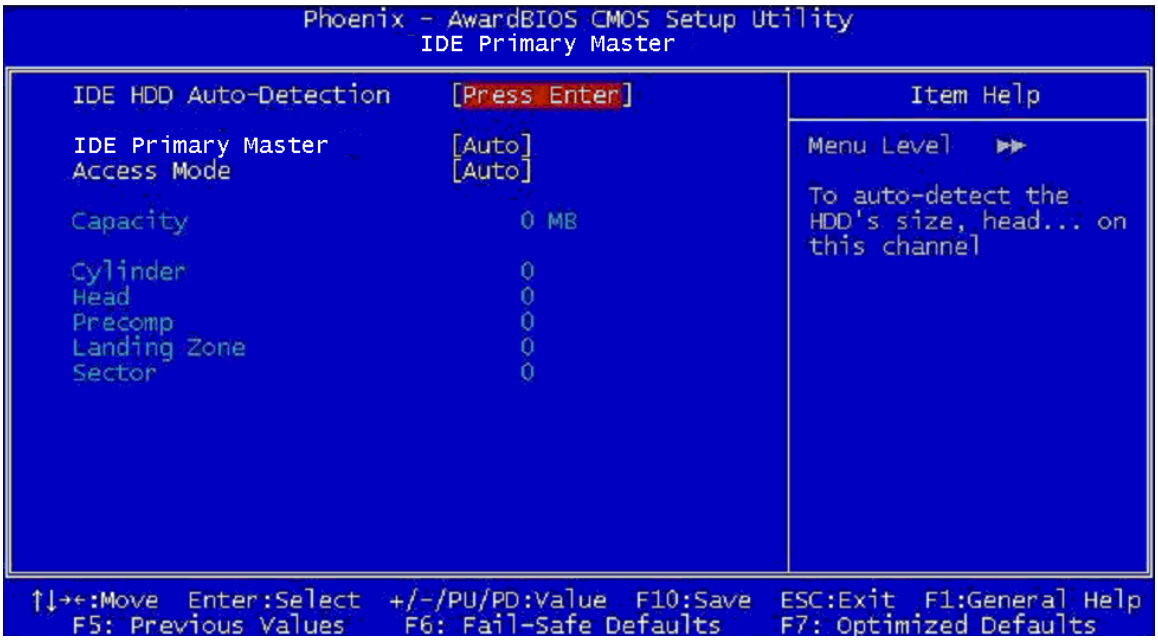
The **Extended Memory** is NOT user configurable. The BIOS determines how much extended memory is present during the POST. This is the amount of memory above 1MB located in the memory address map of the CPU.

➔ **Total Memory**

The **Total Memory** is NOT user configurable.

6.2.1 IDE Primary Master/Slave

Use the **IDE Primary Master/Slave** menu (**BIOS Menu 3**) to set or change the master/slave IDE configurations.


Phoenix - AwardBIOS CMOS Setup Utility
IDE Primary Master
IDE HDD Auto-Detection [Press Enter]
IDE Primary Master [Auto]
Access Mode [Auto]
Capacity 0 MB
Cylinder 0
Head 0
Precomp 0
Landing Zone 0
Sector 0
Item Help
Menu Level ▶▶
To auto-detect the HDD's size, head... on this channel
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

BIOS Menu 3: IDE Channel Master

➔ **IDE HDD Auto-Detection [Press Enter]**

Use the **IDE HDD Auto-Detection** option to enable BIOS to automatically detect the IDE settings. Select **IDE HDD Auto-Detection** and press **ENTER.** BIOS automatically detects the HDD type. Do not set this option manually.

➔ **IDE Primary Master [Auto]**

Use the **IDE Primary Master** option to activate or deactivate the following drive channels:

- Channel 0 Master
- Channel 0 Slave
- Channel 1 Master
- Channel 0 Slave

➔ **None** If no drives are connected to the IDE channel select this option. Once set, this IDE channel becomes inaccessible and any drives attached to it are undetected.

➔ **Auto** (DEFAULT) Setting this option allows the device to be automatically detected by the BIOS.

➔ **Manual** Selecting this option allows manual configuration of the device on the IDE channel in BIOS.

➔ **Access Mode [Auto]**

The **Access Mode** option can only be configured if the BIOS configuration option is set to either **Manual** or **Auto**. Use the **Access Mode** option to determine the hard disk BIOS translation modes. Most systems now use hard drives with large capacities and therefore either the LBA translation mode or auto mode should be selected.

➔ **CHS** Select this mode if the HDD capacity is less than 504MB.

➔ **LBA** Select this mode if the HDD capacity is more than 8.4GB.

➔ **Large** This mode is an extended ECHS mode and while it supports HDDs larger than 504MB, it is not recommended.

➔ **Auto** (DEFAULT) If you are unsure of what access mode to set, select this option.

➔ **Capacity**

The **Capacity** specification indicates the storage capacity of the HDD installed in the system.

➔ **Cylinder**

The **Cylinder** specification indicates how many cylinders (tracks) are on the HDD installed in the system.

➔ **Head**

The **Head** specification indicates how many logical heads are on the HDD installed in the system.

➔ **Precomp**

The **Precomp** specification indicates on what track the write precompensation begins.

➔ **Landing Zone**

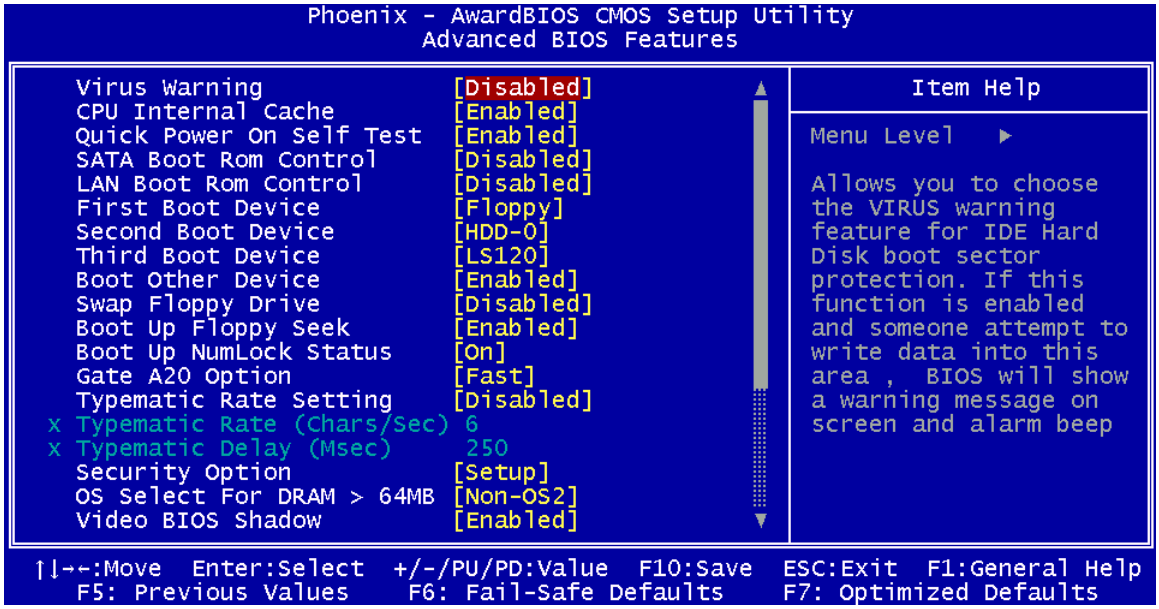
The **Landing Zone** specification indicates where the disk head will park itself after the system powers off.

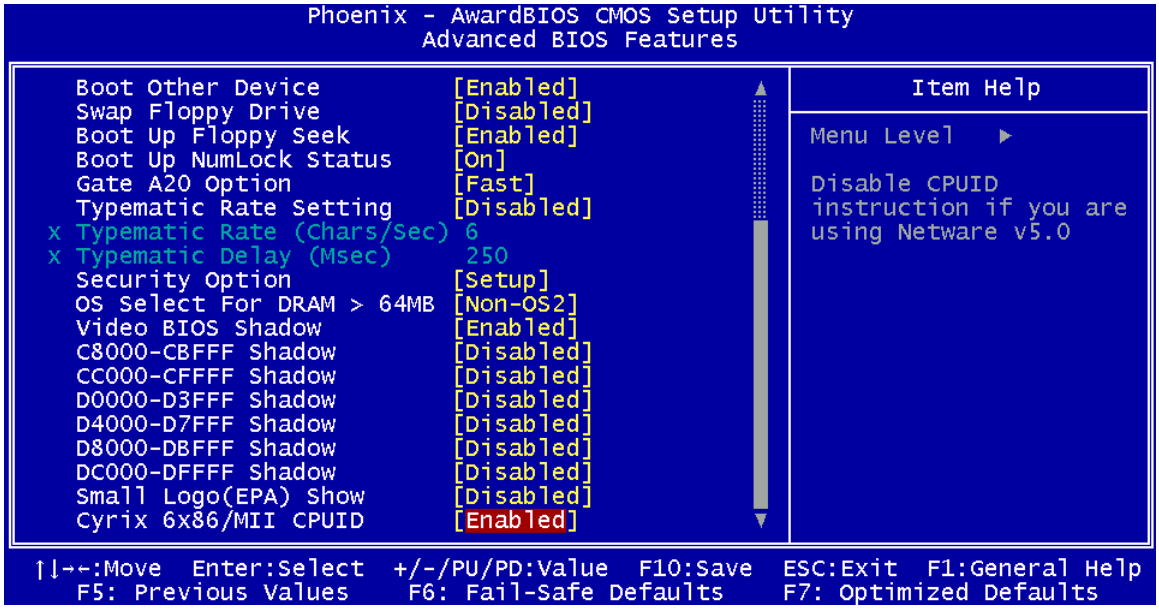
➔ **Sector**

The **Sector** specification indicates how many logical sectors the HDD has been divided into.

6.3 Advanced BIOS Features

Use the **Advanced BIOS Features** menu (**BIOS Menu 4**) to configure the CPU and peripheral device configuration options.


Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features
Virus Warning [Disabled]
CPU Internal Cache [Enabled]
Quick Power On Self Test [Enabled]
SATA Boot Rom Control [Disabled]
LAN Boot Rom Control [Disabled]
First Boot Device [Floppy]
Second Boot Device [HDD-0]
Third Boot Device [LS120]
Boot Other Device [Enabled]
Swap Floppy Drive [Disabled]
Boot Up Floppy Seek [Enabled]
Boot Up NumLock Status [On]
Gate A20 Option [Fast]
Typematic Rate Setting [Disabled]
x Typematic Rate (Chars/Sec) 6
x Typematic Delay (Msec) 250
Security Option [Setup]
OS Select For DRAM > 64MB [Non-OS2]
Video BIOS Shadow [Enabled]
Item Help
Menu Level ▶
Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area , BIOS will show a warning message on screen and alarm beep
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults


Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features
Boot Other Device [Enabled]
Swap Floppy Drive [Disabled]
Boot Up Floppy Seek [Enabled]
Boot Up NumLock Status [On]
Gate A20 Option [Fast]
Typematic Rate Setting [Disabled]
x Typematic Rate (Chars/Sec) 6
x Typematic Delay (Msec) 250
Security Option [Setup]
OS Select For DRAM > 64MB [Non-OS2]
Video BIOS Shadow [Enabled]
C8000-CBFFF Shadow [Disabled]
CC000-CFFFF Shadow [Disabled]
D0000-D3FFF Shadow [Disabled]
D4000-D7FFF Shadow [Disabled]
D8000-DBFFF Shadow [Disabled]
DC000-DFFFF Shadow [Disabled]
Small Logo(EPA) Show [Disabled]
Cyrix 6x86/MII CPUID [Enabled]
Item Help
Menu Level ▶
Disable CPUID instruction if you are using Netware v5.0
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

BIOS Menu 4: Advanced BIOS Features

➔ **Virus Warning [Disabled]**

NOTE:

Many disk diagnostic programs can cause the above warning message to appear when the program attempts to access the boot sector table. If you are running such a program, it is recommended that the virus protection function be disabled beforehand.

Use the **Virus Warning** option to enable BIOS to monitor the boot sector and partition table of the HDD for any attempted modification. If a modification attempt is made, the BIOS halts the system and an error message appears. If necessary, an anti-virus program can then be run to locate and remove the virus before any damage is done.

➔ **Enabled** Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or HDD partition table.

➔ **Disabled** (DEFAULT) No warning message appears when there is an attempt to access the boot sector or HDD partition table.

➔ **CPU Internal Cache [Enabled]**

Use the **CPU Internal Cache** option to enable or disable the internal CPU cache.

➔ **Disabled** The internal CPU cache is disabled.

➔ **Enabled** (DEFAULT) The internal CPU cache is enabled.

➔ **Quick Power On Self Test [Enabled]**

Use the **Quick Power On Self Test** option to speed up the POST after the computer is turned on. If enabled, BIOS shortens or skips some POST check items.

- ➔ Disabled Normal POST occurs after the computer is turned on.
- ➔ Enabled (DEFAULT) Quick POST occurs after the computer is turned on.

➔ **SATA Boot ROM Control [Disabled]**

Use the **SATA Boot ROM Control** option to configure SATA IDE use in DOS mode.

- ➔ **Disabled** (DEFAULT) Disables SATA IDE use in DOS mode
- ➔ **Enabled** Enables SATA IDE use in DOS mode

➔ **LAN Boot Rom [Enabled]**

The **LAN Boot Rom** option enables the system to be booted from a remote system.

- ➔ **Disabled** (DEFAULT) The system cannot be booted from a remote system through the LAN.
- ➔ **Enabled** The system can be booted from a remote system through the LAN.

➔ **Boot Device**

Use the **Boot Device** options to select the order of the devices the system boots from. There are three boot device configuration options:

- **First Boot Device** [Default: Floppy]
- **Second Boot Device** [Default: HDD-0]
- **Third Boot Device** [Default: LS120]

Using the default values, the system first looks for a HDD to boot from. If it cannot find an HDD, it boots from a CD-ROM. If both The HDD and the CD-ROM are unavailable, the system boots from a SCSI drive.

Boot Device configuration options are:

- Floppy
- LS120
- HDD-0
- SCSI
- CDROM
- HDD-1
- ZIP100
- USB-FDD
- USB-ZIP
- USB-CDROM
- USB-HDD
- LAN
- Disabled

➔ **Boot Other Device [Enabled]**

Use the **Boot Other Device** option to determine whether the system uses a second or third boot device if the first boot device is not found.

➔ **Disabled** The system does not look for second and third boot devices if the first one is not found.

➔ **Enabled** (DEFAULT) The system looks for second and third boot devices if the first one is not found.

➔ **Swap Floppy Drive [Disabled]**

Use the **Swap Floppy Drive** option to designate drive A as drive B and drive B as drive A.

➔ **Disabled** (DEFAULT) Cannot designate A or B to a floppy drive without changing the physical connection

➔ **Enabled** Can designate A or B to a floppy drive without changing the physical connection

➔ **Boot Up Floppy Seek [Enabled]**

Use the **Boot Up Floppy Seek** option to enable the BIOS to determine if the floppy disk drive installed has 40 or 80 tracks during the POST. 360K FDDs have 40 tracks while 760K, 1.2M and 1.44M FDDs all have 80 tracks.

➔ **Disabled** (DEFAULT) BIOS does not search for the type of FDD drive by track number. Note that there is no warning message if the drive installed is 360K.

➔ **Enabled** BIOS searches for a FDD to determine if it has 40 or 80 tracks. Note that BIOS cannot tell the difference between 720K, 1.2M or 1.44M drives as they all have 80 tracks.

➔ **Boot Up Numlock Status [On]**

Use the **Boot Up Numlock Status** option to specify the default state of the numeric keypad.

➔ **Off** The keys on the keypad are not activated.

➔ **On** (DEFAULT) Activates the keys on the keypad.

➔ **Gate A20 Option [Fast]**

Use the **Gate A20 Option** option to set if the keyboard controller or the chipset controls the Gate A20 switching.

➔ **Normal** The keyboard controller does the switching.

➔ **Fast** (DEFAULT) The chipset does the switching.

➔ **Typematic Rate Setting [Disabled]**

Use the **Typematic Rate Setting** configuration option to specify if only one character is allowed to appear on the screen if a key is continuously held down. When this option is enabled, the BIOS reports as before, but it then waits a moment, and, if the key is still held down, it begins to report that the key has been pressed repeatedly. This feature accelerates cursor movement with the arrow keys.

➔ **Disabled** (DEFAULT) Disables the typematic rate.

➔ **Enabled** Enables the typematic rate.

➔ **Typematic Rate (Chars/sec) [6]**

The **Typematic Rate** option can only be configured if the **Typematic Rate Setting** is enabled. Use the **Typematic Rate** option to specify the rate keys are accelerated.

➔ **6** (DEFAULT) 6 characters per second

➔ **8** 8 characters per second

➔ **10** 10 characters per second

➔ **12** 12 characters per second

➔ **15** 15 characters per second

➔ **20** 20 characters per second

➔ **24** 24 characters per second

➔ **30** 30 characters per second

➔ **Typematic Delay (Msec) [250]**

The **Typematic Rate** option can only be configured if the **Typematic Rate Setting** is enabled. Use the **Typematic Delay** option to specify the delay time between when a key is first pressed and when the acceleration begins.

➔ **250**	(DEFAULT)	250 milliseconds
➔ **500**		500 milliseconds
➔ **750**		750 milliseconds
➔ **1000**		1000 milliseconds

➔ **Security Option [Setup]**

Use the **Security Option** to limit access to both the system and Setup, or just Setup.

➔ **Setup**	(DEFAULT)	The system does not boot and access to Setup is denied if the correct password is not entered at the prompt.
➔ **System**		The system boots, but access to Setup is denied if the correct password is not entered at the prompt.

NOTE:

To disable security, select the password setting in the Main Menu. When asked to enter a password, do not type anything, press **ENTER** and the security is disabled. Once the security is disabled, the system boots and Setup can be accessed.

➔ **OS Select For DRAM > 64MB [Non-OS2]**

Use the **OS Select For DRAM > 64MB** option to specify the operating system.

➔ **Enabled** Specifies the operating system used as OS/2.

➔ **Disabled** (DEFAULT) Select this option when not using the OS/2 operating system.

➔ **Video BIOS Shadow [Enabled]**

Use the **Video Bios Shadow** option to enable video BIOS to be copied to RAM.

➔ **Disabled** Video BIOS is not copied to RAM.

➔ **Enabled** (DEFAULT) Video BIOS is copied to RAM.

➔ **XXXXX-YYYYY Shadow [Disabled]**

Use the **XXXXX-YYYYY Shadow** option to write the contents of the ROM area XXXXX-YYYYY to the same address in the system RAM.

➔ **Disabled** (DEFAULT) Contents from ROM area XXXXX-YYYYY are not written to the RAM.

➔ **Enabled** Contents from ROM area XXXXX-YYYYY are written to the RAM.

➔ **Small Logo (EPA) Show [Disabled]**

Use the **Small Logo (EPA) Show** option to specify if the Environmental Protection Agency (EPA) logo appears during the system boot-up process. If enabled, the boot up process may be delayed.

➔ **Disabled** (DEFAULT) EPA logo does not appear during boot up.

➔ **Enabled** EPA logo appears during boot up.

➔ **Cyrix 6x86/MII CPUID [Enabled]**

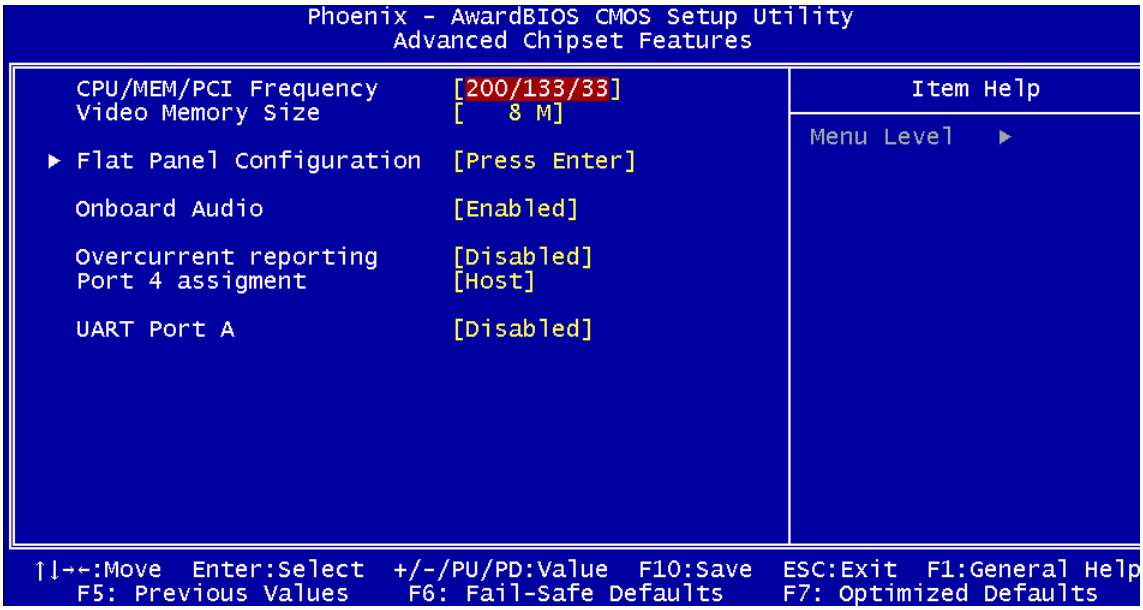
Use the **Cyrix 6x86/MII CPUID** option to determine if the system checks to see if a Cyrix CPU is installed.

➔ **Disabled** (DEFAULT) The system does not look for a Cyrix CPU.

➔ **Enabled** The system looks for a Cyrix CPU.

6.4 Advanced Chipset Features

Use the **Advanced Chipset Features** menu (**BIOS Menu 5**) to change chipset configuration options.


Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features
CPU/MEM/PCI Frequency [200/133/33]
Video Memory Size [8 M]
Flat Panel Configuration [Press Enter]
Onboard Audio [Enabled]
Overcurrent reporting [Disabled]
Port 4 assigment [Host]
UART Port A [Disabled]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

BIOS Menu 5: Advanced Chipset Features

➔ **CPU/MEM/PCI Frequency [333/222/33]**

Use the **CPU/MEM PCI Frequency** option to set the CPU, Memory, and PCI frequency. The **CPU/MEM/PCI Frequency** options are:

- 200/133/33
- 333/222/33 (DEFAULT)

➔ **Video Memory Size [8M]**

Use the **Video Memory Size** option to determine how much memory is allocated to the video graphics device. The **Video Memory Size** options are:

- None
- 4M
- 6M
- 8M (DEFAULT)
- 12M
- 16M

➔ **Flat Panel Configuration [Press Enter]**

Use the **Flat Panel Configuration** option to open the **Flat Panel Configuration** menu. The **Flat Panel Configuration** options are shown in **Section 6.4.1**.

➔ **OnBoard Audio [Enabled]**

Use the **OnBoard Audio** option to enable or disable the onboard codec.

➔ **Disabled** The onboard codec is disabled.

➔ **Enabled** (DEFAULT) The onboard codec is detected and enabled.

➔ **Overcurrent Reporting [Disabled]**

Use the **Overcurrent Reporting** option to activate the audible alarm when the detected current exceeds safety thresholds.

➔ **Disabled** (DEFAULT) The audible alarm will not be activated if the detected current exceeds safety thresholds.

➔ **Enabled** The audible alarm sound will be activated if the detected current exceeds safety thresholds.

➔ **Port 4 Assignment [Host]**

Use the **Port 4 Assignment** option to assign the function of USB port 4. The **Port 4 Assignment** options are:

- **Host** (DEFAULT)
- **Device**
- **Not Used**

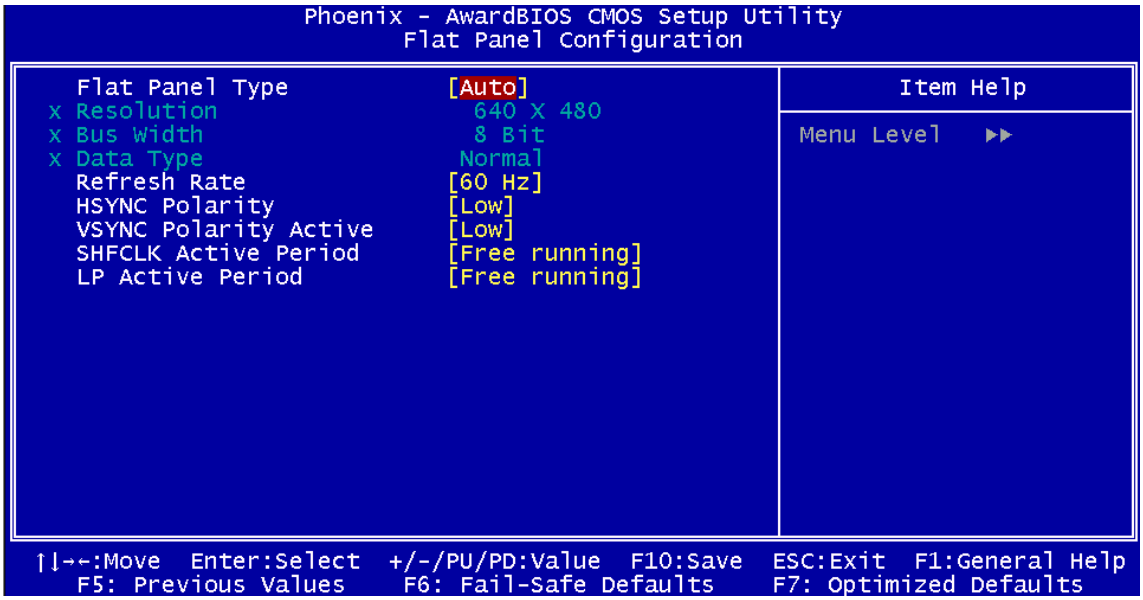
➔ **UART Port A [Disabled]**

Use the **UART Port A** option to select the I/O address and IRQ for the UART port A. The **UART Port A** options are:

- Disabled (DEFAULT)
- 3F8/IRQ4
- 2F8/IRQ3
- 3E8/IRQ4
- 2E8/IRQ3

6.4.1 Flat Panel Configuration

Use the **Flat Panel Configuration** menu (**BIOS Menu 6**) to set the configuration settings for the flat panel screen connected to the system.


Phoenix - AwardBIOS CMOS Setup Utility
Flat Panel Configuration
Flat Panel Type [Auto]
x Resolution 640 X 480
x Bus Width 8 Bit
x Data Type Normal
Refresh Rate [60 Hz]
HSYNC Polarity [Low]
VSYNC Polarity Active [Low]
SHFCLK Active Period [Free running]
LP Active Period [Free running]
Item Help
Menu Level ▶▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

BIOS Menu 6: Flat Panel Configuration

➔ **Flat Panel Type [Auto]**

Use the **Flat Panel Type** option to specify the type of flat panel screen connected to the system.

➔ **SSTN** Specifies the system is connected to a SSTN display.

➔ **DSTN** Specifies the system is connected to an DSTN display.

➔ **TFT** Specifies the system is connected to a TFT display.

➔ **LVDS** Specifies the system is connected to an LVDS display.

➔ **Auto** (DEFAULT) The system detects the display type and the display settings.

➔ **Resolution [640 x 480]**

The **Resolution** option can only be configured if the **Flat Panel Type** option is not set to **Auto**. Use the **Resolution** option to set the resolution of the flat panel screen connected to the system. The **Resolution** options are:

- 640 x 480 (DEFAULT)
- 800 x 600
- 1024 x 768

➔ **Bus Width [8 Bit]**

The **Bus Width** option can only be configured if the **Flat Panel Type** option is not set to **Auto**. Use the **Data Bus Width** to specify the number of bits that can be transmitted to and from the selected display.

- 8 Bit (DEFAULT)
- 9 Bit
- 12 Bit
- 16 Bit
- 18 Bit
- 24 Bit

➔ **Data Type [Normal]**

The **Data Type** option can only be configured if the **Flat Panel Type** option is not set to **Auto**. Use the **Data Type** option to set the bus type used to transfer data between the system and the flat panel screen connected to the system. The **Data Type** options are:

- Normal (DEFAULT)
- 2 X

➔ **Refresh Rate [60Hz]**

The **Refresh Rate** option can only be configured if the **Flat Panel Type** option is not set to **Auto**. Use the **Refresh Rate** option to set the screen refresh rate required by the panel connected to the system. Check the documentation that came with the panel before setting this option. The **Refresh Rate** options are:

- 60Hz (DEFAULT)
- 65Hz
- 70Hz
- 72Hz
- 75Hz
- 85Hz

➔ **HSYNC Polarity [Low]**

The **HSYNC Polarity** option can only be configured if the **Flat Panel Type** option is not set to **Auto**. Use the **HSYNC Polarity** option to set the polarity of the HSYNC signal to the panel. The **HSYNC Polarity** options are:

- High
- Low (DEFAULT)

➔ **VSYNC Polarity Active [Low]**

The **VGSYNC Polarity Active** option can only be configured if the **Flat Panel Type** option is not set to **Auto**. Use the **VGSYNC Polarity Active** option to set the polarity of the VSYNC signal to the panel. The **VGSYNC Polarity Active** options are:

- High
- Low (DEFAULT)

➔ **SHFCLK Active Period [Free Running]**

Use the **SHFCLK Active Period** option to set the SHFCLK. The **SHFCLK Active Period** options are:

- Active Only
- Free running (DEFAULT)

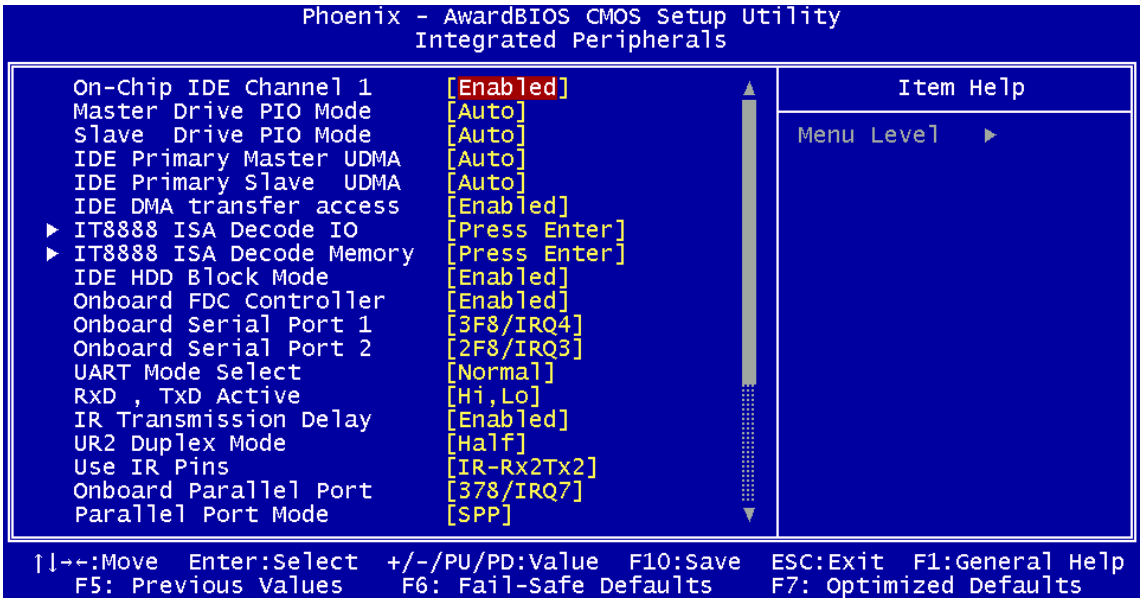
➔ **LP Active Period [Free Running]**

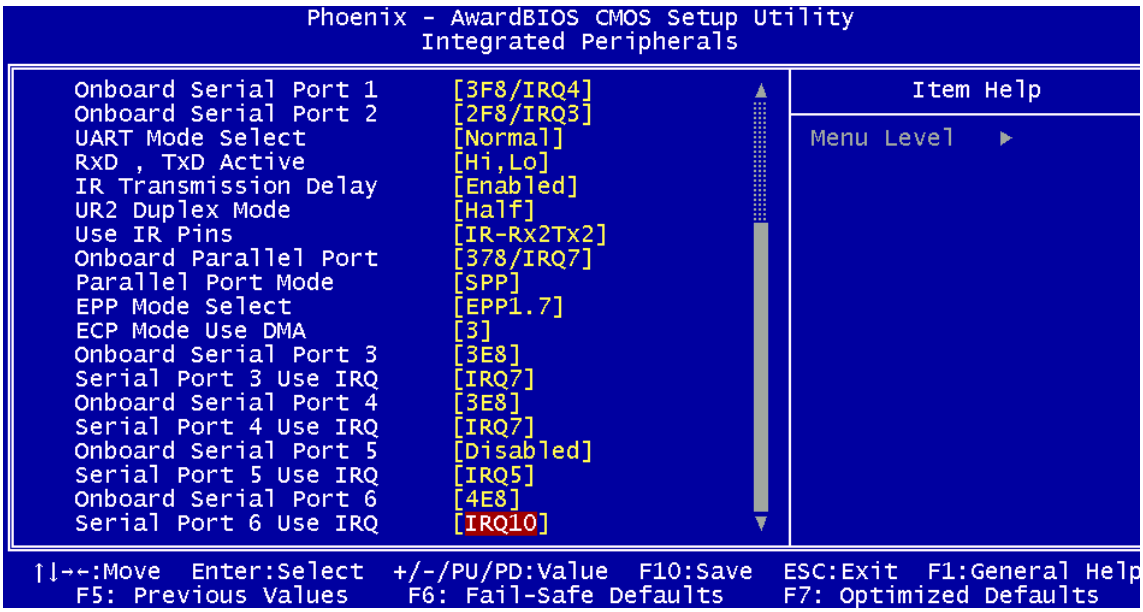
Use the **LP Active Period** option to set the LDE/MOD signal to the panel. The **LP Active Period** options are:

- Active Only
- Free running (DEFAULT)

6.5 Integrated Peripherals

Use the **Integrated Peripherals** menu (**BIOS Menu 7**) to change the configuration options for the attached peripheral devices.


Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals
On-Chip IDE Channel 1 [Enabled]
Master Drive PIO Mode [Auto]
Slave Drive PIO Mode [Auto]
IDE Primary Master UDMA [Auto]
IDE Primary Slave UDMA [Auto]
IDE DMA transfer access [Enabled]
IT8888 ISA Decode IO [Press Enter]
IT8888 ISA Decode Memory [Press Enter]
IDE HDD Block Mode [Enabled]
Onboard FDC Controller [Enabled]
Onboard Serial Port 1 [3F8/IRQ4]
Onboard Serial Port 2 [2F8/IRQ3]
UART Mode Select [Normal]
RxD , TxD Active [Hi,Lo]
IR Transmission Delay [Enabled]
UR2 Duplex Mode [Half]
Use IR Pins [IR-Rx2Tx2]
Onboard Parallel Port [378/IRQ7]
Parallel Port Mode [SPP]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults


Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals
Onboard Serial Port 1 [3F8/IRQ4]
Onboard Serial Port 2 [2F8/IRQ3]
UART Mode Select [Normal]
RxD , TxD Active [Hi,Lo]
IR Transmission Delay [Enabled]
UR2 Duplex Mode [Half]
Use IR Pins [IR-Rx2Tx2]
Onboard Parallel Port [378/IRQ7]
Parallel Port Mode [SPP]
EPP Mode Select [EPP1.7]
ECP Mode Use DMA [3]
Onboard Serial Port 3 [3E8]
Serial Port 3 Use IRQ [IRQ7]
Onboard Serial Port 4 [3E8]
Serial Port 4 Use IRQ [IRQ7]
Onboard Serial Port 5 [Disabled]
Serial Port 5 Use IRQ [IRQ5]
Onboard Serial Port 6 [4E8]
Serial Port 6 Use IRQ [IRQ10]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

BIOS Menu 7: Integrated Peripherals

➔ **On-Chip IDE Channel 1 [Enabled]**

Use the **On-Chip IDE Channel 1** option to specify if the system uses the integrated primary IDE channel or not.

➔ **Disabled** The primary IDE channel is not used.

➔ **Enabled** (DEFAULT) The primary IDE channel is used.

➔ **Drive PIO Mode [Auto]**

Use the **Drive PIO Mode** options below to select the Programmed Input/Output (PIO) mode for the following HDDs:

- Master Drive PIO Mode
- Slave Drive PIO Mode

➔ **Auto** (DEFAULT) The computer selects the correct mode.

➔ **Mode 0** PIO mode 0 selected with a maximum transfer rate of 3.3MBps.

- **Mode 1** PIO mode 1 selected with a maximum transfer rate of 5.2MBps.
- **Mode 2** PIO mode 2 selected with a maximum transfer rate of 8.3MBps.
- **Mode 3** PIO mode 3 selected with a maximum transfer rate of 11.1MBps.
- **Mode 4** PIO mode 4 selected with a maximum transfer rate of 16.6MBps.

➔ **IDE UDMA [Auto]**

Use the **IDE UDMA** option below to select the Ultra DMA (UDMA) mode for the following HDDs:

- IDE Primary Master UDMA
- IDE Primary Slave UDMA

- **Auto** (DEFAULT) The computer selects the correct UDMA.
- **Disabled** The UDMA for the HDD device is disabled.

➔ **IDE DMA transfer access [Enabled]**

Use the **IDE DMA transfer access** option to enable or disable DMA support for IDE devices connected to the system.

- **Disabled** All IDE drive DMA transfers are disabled. The IDE drives use PIO mode transfers.
- **Enabled** (DEFAULT) All IDE drive DMA transfers are enabled.

➔ **IT8888 ISA Decode IO [Press Enter]**

Use the IDE ISA Decode IO option to open the IT8888 ISA Decode I/O menu. The IT8888 ISA Decode I/O options are shown in **Section 6.5.1**.

➔ **IT8888 ISA Decode Memory [Press Enter]**

Use the IDE ISA Decode Memory option to open the IT8888 ISA Decode Memory menu. The IT8888 ISA Decode Memory options are shown in **Section 6.5.2**.

➔ **IDE HDD Block Mode [Enabled]**

If the drive connected to the system supports block mode, use the **IDE HDD Block Mode** option to enable the system to detect the optimal number of block read/writes per sector the system IDE drive can support. Block mode is also called block transfer, multiple commands, or multiple sector read/write.

- ➔ **Disabled** Block mode is not supported.
- ➔ **Enabled** (DEFAULT) Block mode is supported.

➔ **Onboard FDC Controller [Enabled]**

Use the **Onboard FDC Controller** option to enable or disable the onboard floppy controller. If the system is not connected to a floppy disk or uses an adapter for the FDD, this option can be disabled.

- ➔ **Disabled** The FDD controller is disabled.
- ➔ **Enabled** (DEFAULT) The FDD controller is enabled.

➔ **Onboard Serial Port 1 [3F8/IRQ4]**

Use the **Onboard Serial Port 1** option to select the I/O address and IRQ for the onboard serial port 1. The serial port can be disabled or the I/O address and the IRQ can be automatically selected by the BIOS. The **Onboard Serial Port 1** options are:

- Disabled
- 3F8/IRQ4 (DEFAULT)
- 2F8/IRQ3
- 3E8/IRQ4
- 2E8/IRQ3
- Auto

➔ **Onboard Serial Port 2 [2F8/IRQ3]**

Use the **Onboard Serial Port 2** option to select the I/O address and IRQ for the onboard serial port 2. The serial port can be disabled or the I/O address and the IRQ can be automatically selected by the BIOS. The **Onboard Serial Port 2** options are:

- Disabled
- 3F8/IRQ4
- 2F8/IRQ3 (DEFAULT)
- 3E8/IRQ4
- 2E8/IRQ3
- Auto

➔ **UART Mode Select [Normal]**

Use the **UART Mode Select** to select the UART mode for the system.

➔ **IrDA**		Infrared port compliant with IrDA specification
➔ **ASK IR**		Amplitude shift keyed infrared port
➔ **Normal**	(DEFAULT)	RS-232C serial port

➔ **x RxD, TxD Active [Hi,Lo]**

The **RxD, TxD Active** option can only be selected if the **UART Mode Select** option is set to IrDA mode or ASKIR mode. Use the **RxD, TxD Active** option to set the infrared reception (RxD) and transmission (TxD) polarity. The **RxD, TxD Active** options are:

- Hi, Hi
- Hi, Lo (DEFAULT)
- Lo, Hi
- Lo, Lo

➔ **x IR Transmission Delay [Enabled]**

Use the **IR Transmission Delay** option to enable or disable IR transmission delays.

➔ **Disabled** IR transmissions are not delayed.

➔ **Enabled** (DEFAULT) IR transmissions are delayed.

➔ **x UR2 Duplex Mode [Half]**

Use the **UR2 Duplex Mode** option to specify the transmission mode for the IR port device.

➔ **Full** Simultaneous bi-directional transmission occurs.

➔ **Half** (DEFAULT) Transmission only occurs in one direction at a time.

➔ **x Use IR Pins [IR-Rx2Tx2]**

Use the **Use IR Pins** options to specify how the IR pins respond. The **Use IR Pins** options are:

- RxD2, TxD2
- IR-Rx2Tx2 (DEFAULT)

➔ **Onboard Parallel Port [378/IRQ7]**

Use the **Onboard Parallel Port** option to specify a logical LPT port address and corresponding interrupt for the physical parallel port. The **Onboard Parallel Port** options are:

- Disabled
- 378/IRQ7 (DEFAULT)
- 3BC/IRQ7

➔ **Parallel Port Mode [SPP]**

Use the **Parallel Port Mode** option to select parallel port operation mode.

➔ **SPP**	(DEFAULT)	The parallel port operates in the standard parallel port (SPP) mode. This parallel port mode works with most parallel port devices but is slow.
➔ **EPP**		The parallel port operates in the enhanced parallel port mode (EPP). The EPP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the SPP mode.
➔ **ECP**		The parallel port operates in the extended capabilities port (ECP) mode. The ECP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the SPP mode.
➔ **ECP+EPP**		The parallel port is compatible with both ECP and EPP devices.
➔ **Normal**		The normal parallel port mode is the standard mode for parallel port operation.

➔ **x EPP Mode Select [EPP1.7]**

The **EPP Mode Select** option is only available if the **Parallel Port Mode** option is set to EPP mode. Use the **EPP Mode Select** option to select the parallel port mode standard for the parallel port.

➔ **EPP1.9**		EPP 1.9 is selected as the EPP standard.
➔ **EPP1.7**	(DEFAULT)	EPP 1.7 is selected as the EPP standard.

➔ **x ECP Mode Use DMA [3]**

The **ECP Mode Use DMA** option is only available if the **Parallel Port Mode** option is set to ECP mode. Use the **ECP Mode Use DMA** option to specify the DMA channel the parallel port must use in the ECP mode.

➔ **1**		The parallel port uses DMA Channel 1 in ECP mode.
➔ **3**	(DEFAULT)	The parallel port uses DMA Channel 3 in ECP mode.

➔ **Onboard Serial Port 3 [3E8]**

Use the **Onboard Serial Port 3** option to select the base addresses for serial port 3.

➔ **Disabled**		No base address is assigned to serial port 3
➔ **3F8**		Serial port 3 I/O port address is 3F8
➔ **2F8**		Serial port 3 I/O port address is 2F8
➔ **3E8**	DEFAULT	Serial port 3 I/O port address is 3E8
➔ **2E8**		Serial port 3 I/O port address is 2E8

➔ **Serial Port 3 Use IRQ [IRQ7]**

Use the **Serial Port3 IRQ** option to select the interrupt address for serial port 3.

➔ **IRQ5**		Serial port 3 IRQ address is IRQ5
➔ **IRQ7**	DEFAULT	Serial port 3 IRQ address is IRQ7
➔ **IRQ10**		Serial port 3 IRQ address is IRQ10
➔ **IRQ11**		Serial port 3 IRQ address is IRQ11

➔ **Onboard Serial Port 4 [2E8]**

Use the **Onboard Serial Port 4** option to select the base addresses for serial port 4.

- ➔ **Disabled** No base address is assigned to serial port 4
- ➔ **3F8** Serial port 4 I/O port address is 3F8
- ➔ **2F8** Serial port 4 I/O port address is 2F8
- ➔ **3E8** DEFAULT Serial port 4 I/O port address is 3E8
- ➔ **2E8** Serial port 4 I/O port address is 2E8

➔ **Serial Port 4 Use IRQ [IRQ7]**

Use the **Serial Port4 IRQ** option to select the interrupt address for serial port 4.

- ➔ **IRQ5** Serial port 4 IRQ address is IRQ5
- ➔ **IRQ7** DEFAULT Serial port 4 IRQ address is IRQ7
- ➔ **IRQ10** Serial port 4 IRQ address is IRQ10
- ➔ **IRQ11** Serial port 4 IRQ address is IRQ11

➔ **Onboard Serial Port 5 [4E0]**

Use the **Onboard Serial Port 5** option to select the base address for serial port 5.

- ➔ **Disabled** DEFAULT No base address is assigned to serial port 5
- ➔ **4E0** Serial port 5 I/O port address is 4E0
- ➔ **4F8** Serial port 5 I/O port address is 4F8

➔ **Serial Port 5 Use IRQ [IRQ5]**

Use the **Serial Port5 IRQ** option to select the base address for serial port 5.

- ➔ **IRQ5** DEFAULT Serial port 5 IRQ address is IRQ5
- ➔ **IRQ7** Serial port 5 IRQ address is IRQ7

- ➔ **IRQ10** Serial port 5 IRQ address is IRQ10
- ➔ **IRQ11** Serial port 5 IRQ address is IRQ11

➔ **Onboard Serial Port 6 [4E8]**

Use the **Onboard Serial Port 6** option to select the base address for serial port 6.

- ➔ **Disabled** No base address is assigned to serial port 6
- ➔ **4F8** Serial port 6 I/O port address is 4F8
- ➔ **4E8** DEFAULT Serial port 6 I/O port address is 4E8

➔ **Serial Port 6 Use IRQ [IRQ10]**

Use the **Serial Port 6 Use IRQ** option to select the interrupt address for serial port 6.

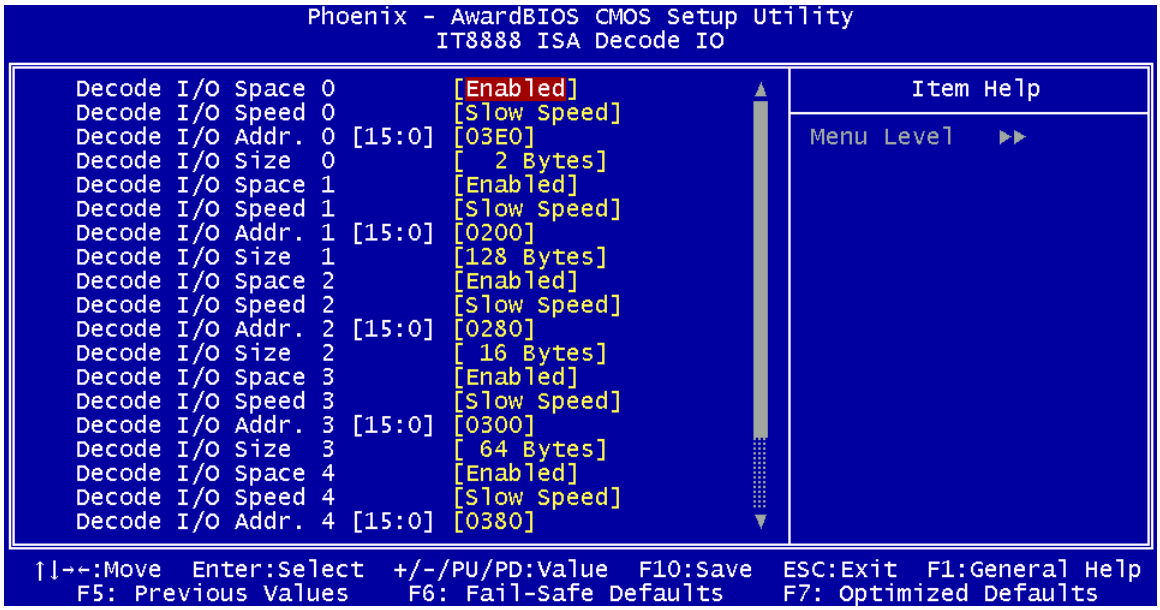
- ➔ **IRQ5** Serial port 5 IRQ address is IRQ5
- ➔ **IRQ7** Serial port 5 IRQ address is IRQ7
- ➔ **IRQ10** Serial port 5 IRQ address is IRQ10
- ➔ **IRQ11** DEFAULT Serial port 5 IRQ address is IRQ11

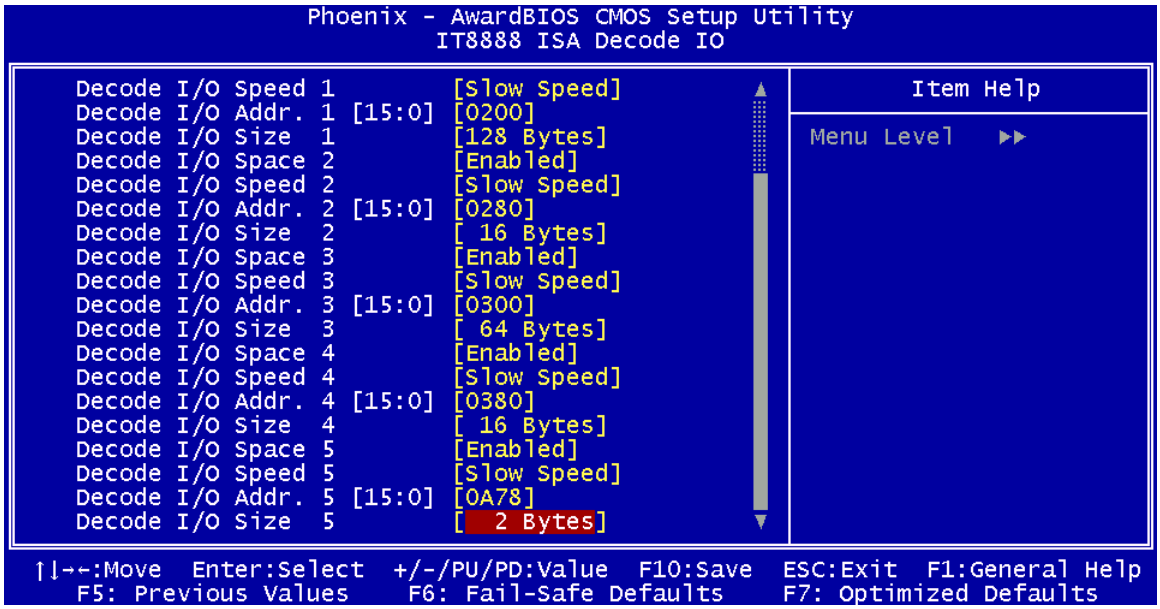
6.5.1 IT8888 ISA Decode IO

NOTE:

Five PCI-104 devices can be stacked onto the NANO-GX motherboard. If these devices are stacked onto the board, the ISA bus space should be enabled. If no PCI-104 devices are being used, disable all the buses. Disabling these buses frees up system resources that can be allocated to other system applications.

Use the **IT8888 ISA Decode IO** menu (**BIOS Menu 8**) to set the IO memory range for the onboard ISA.


Phoenix - AwardBIOS CMOS Setup Utility
IT8888 ISA Decode IO
Decode I/O Space 0 [Enabled]
Decode I/O Speed 0 [Slow Speed]
Decode I/O Addr. 0 [15:0] [03E0]
Decode I/O Size 0 [2 Bytes]
Decode I/O Space 1 [Enabled]
Decode I/O Speed 1 [Slow Speed]
Decode I/O Addr. 1 [15:0] [0200]
Decode I/O Size 1 [128 Bytes]
Decode I/O Space 2 [Enabled]
Decode I/O Speed 2 [Slow Speed]
Decode I/O Addr. 2 [15:0] [0280]
Decode I/O Size 2 [16 Bytes]
Decode I/O Space 3 [Enabled]
Decode I/O Speed 3 [Slow Speed]
Decode I/O Addr. 3 [15:0] [0300]
Decode I/O Size 3 [64 Bytes]
Decode I/O Space 4 [Enabled]
Decode I/O Speed 4 [Slow Speed]
Decode I/O Addr. 4 [15:0] [0380]
Item Help
Menu Level ▶▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults


Phoenix - AwardBIOS CMOS Setup Utility
IT8888 ISA Decode IO
Decode I/O Speed 1 [Slow Speed]
Decode I/O Addr. 1 [15:0] [0200]
Decode I/O Size 1 [128 Bytes]
Decode I/O Space 2 [Enabled]
Decode I/O Speed 2 [Slow Speed]
Decode I/O Addr. 2 [15:0] [0280]
Decode I/O Size 2 [16 Bytes]
Decode I/O Space 3 [Enabled]
Decode I/O Speed 3 [Slow Speed]
Decode I/O Addr. 3 [15:0] [0300]
Decode I/O Size 3 [64 Bytes]
Decode I/O Space 4 [Enabled]
Decode I/O Speed 4 [Slow Speed]
Decode I/O Addr. 4 [15:0] [0380]
Decode I/O Size 4 [16 Bytes]
Decode I/O Space 5 [Enabled]
Decode I/O Speed 5 [Slow Speed]
Decode I/O Addr. 5 [15:0] [0A78]
Decode I/O Size 5 [2 Bytes]
Item Help
Menu Level ▶▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

BIOS Menu 8: IT8888 ISA Decode IO

The **IT8888 ISA Decode IO** menu has the following common options:

- Decode I/O Space N
- Decode I/O Speed N
- Decode I/O Addr. N [15:0]
- Decode I/O Size N

Where N is an integer in the set [1, 2, 3, 4, 5] and represents a set for the PCI-104 devices that are attached to the system.

➔ **Decode IO Space N [Enabled]**

Use the **Decode IO Space N** option to allocate system resources to the ISA bridge and to enable the Nth PCI-104 to function correctly.

➔ **Disabled** The Nth IO set is disabled and the system resources are reallocated to other applications.

➔ **Enabled** (DEFAULT) The Nth IO set is enabled and dedicated system resources are allocated to the Nth ISA bus.

➔ **Decode IO Speed N [Slow Speed]**

Use the **Decode IO Speed N** option to specify the speed of the Nth ISA bus. The following options are available:

- Fast Speed
- Middle Speed
- Slow Speed
- Subtractive Speed

➔ **Decode IO Address N 0:15 [xx]**

Use the **Decode IO Address N 0:15** option to allocate an address to the ISA bus. The address may range from **0001** to **FFFF**.

➔ **Decode IO Size N**

Use the **Decode IO Size N** option to specify the size of the ISA bus. The following options are available:

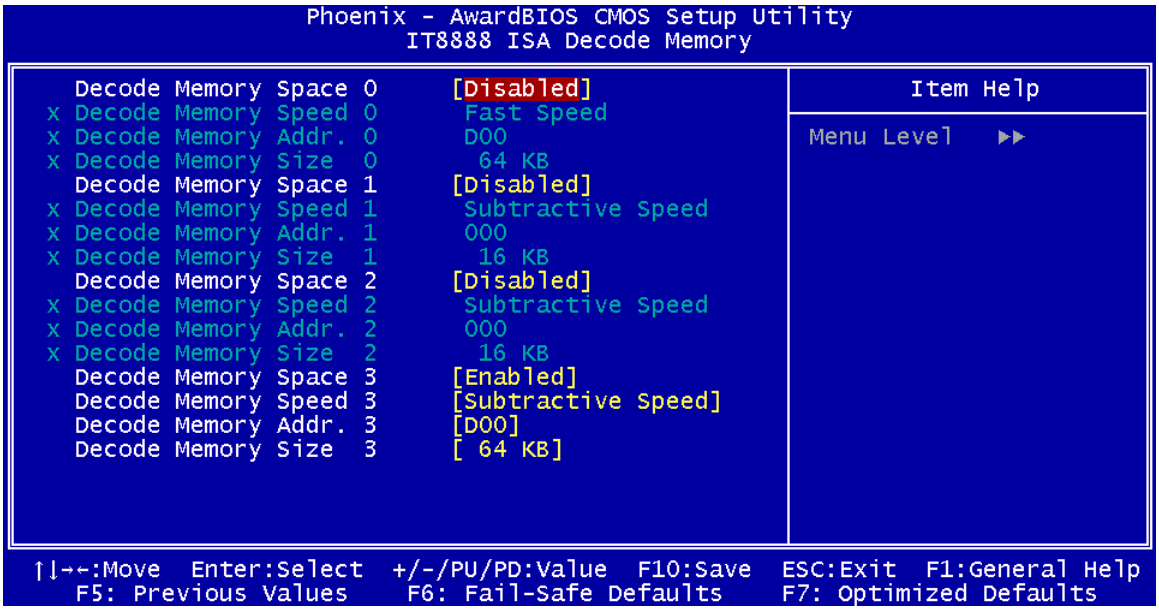
- 1 Byte
- 2 Bytes
- 4 Bytes
- 8 Bytes
- 16 Bytes
- 32 Bytes
- 64 Bytes
- 128 Bytes

6.5.2 IT8888 ISA Decode Memory

NOTE:

Five PCI-104 devices can be stacked onto the JUKI-LX motherboard. If these devices are stacked onto the board, the ISA memory should be enabled. If no PCI-104 devices are being used, disable all the memory allocations for these buses. Disabling the memory allocations frees up system resources that can be allocated to other system applications.

Use the **IT8888 ISA Decode Memory** (**BIOS Menu 9**) to set the resources for the onboard ISA bus.


Phoenix - AwardBIOS CMOS Setup Utility
IT8888 ISA Decode Memory
Decode Memory Space 0 [Disabled]
x Decode Memory Speed 0 Fast Speed
x Decode Memory Addr. 0 D00
x Decode Memory Size 0 64 KB
Decode Memory Space 1 [Disabled]
x Decode Memory Speed 1 Subtractive Speed
x Decode Memory Addr. 1 000
x Decode Memory Size 1 16 KB
Decode Memory Space 2 [Disabled]
x Decode Memory Speed 2 Subtractive Speed
x Decode Memory Addr. 2 000
x Decode Memory Size 2 16 KB
Decode Memory Space 3 [Enabled]
Decode Memory Speed 3 [Subtractive Speed]
Decode Memory Addr. 3 [D00]
Decode Memory Size 3 [64 KB]
Item Help
Menu Level ▶▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

BIOS Menu 9: IT8888 ISA Decode Memory

The **IT8888 ISA Decode IO Memory** menu has the following common options:

- Decode Memory Space N
- Decode Memory Speed N
- Decode Memory Addr. N [15:0]
- Decode Memory Size N

Where N is an integer in the set [1, 2, 3, 4, 5] and represents a memory set for the PCI-104 devices that are attached to the system.

➔ **Decode Memory Space N [Disabled]**

Use the **Decode IO Memory N** option to allocate memory resources to the ISA bridge and to enable the PCI-104 to function correctly.

➔ **Disabled** (DEFAULT) The Nth memory set is disabled and the system memory resources are reallocated to other applications.

➔ **Enabled** The Nth memory set is enabled and dedicated system memory resources are allocated to the ISA bus.

➔ **Decode Memory Speed N [Fast Speed]**

Use the **Decode Memory Speed N** option to specify the memory speed of the ISA bus. The following options are available:

- Subtractive Speed
- Slow Speed
- Medium Speed
- Fast Speed

➔ **Decode Memory Address N [xx]**

Use the **Decode Memory Address N** option to allocate an address to the memory of the ISA bus. The address may range from **0001** to **FFFF**.

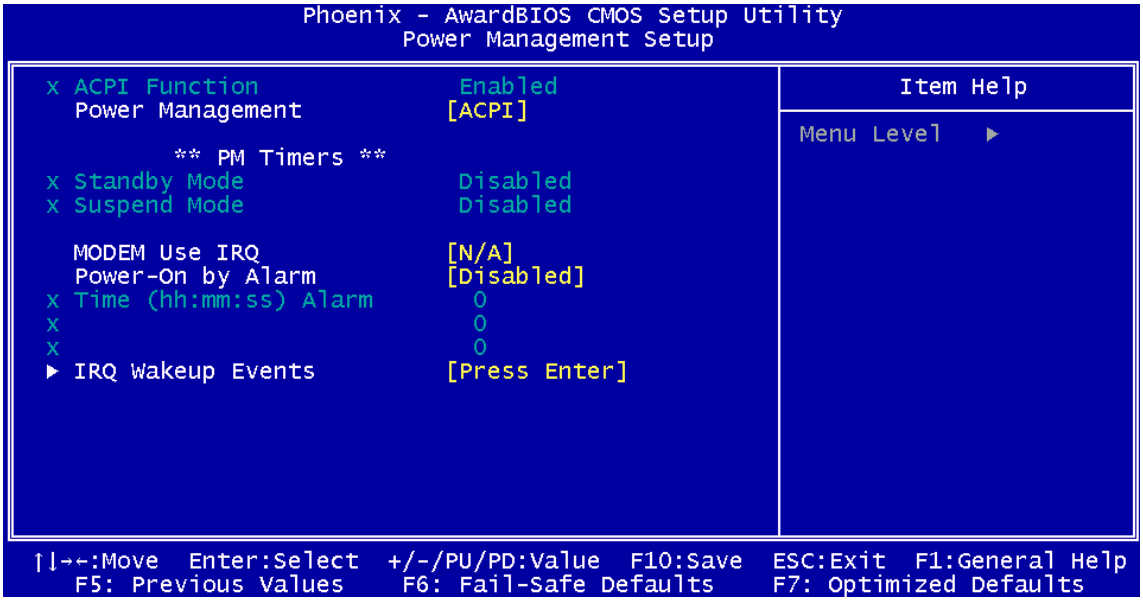
➔ **Decode Memory Size N [xx]**

Use the Decode Memory **Size N** option to specify the memory size of the ISA bus. The following options are available:

- 16 KB
- 32 KB
- 64 KB
- 128 KB
- 256 KB
- 512 KB
- 1 MB
- 2 MB

6.6 Power Management Setup

Use the **Power Management Setup** menu (**BIOS Menu 10**) to set the BIOS power management and saving features.


Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup
x ACPI Function Enabled
Power Management [ACPI]
** PM Timers **
x Standby Mode Disabled
x Suspend Mode Disabled
MODEM Use IRQ [N/A]
Power-On by Alarm [Disabled]
x Time (hh:mm:ss) Alarm 0
x 0
x 0
▶ IRQ Wakeup Events [Press Enter]
Item Help
Menu Level ▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

BIOS Menu 10: Power Management Setup

➔ **ACPI Function [Enabled]**

The **ACPI Function** option is not user configurable.

➔ **Power Management [ACPI]**

Use the **Power Management** option to set the power management type used by the system.

➔ **Disabled**		All power management options are turned off. The only user configurable options are the power button and alarm settings.
➔ **Legacy**		Standby and suspend modes can be set.
➔ **APM**		Advanced power management (APM) is activated
ACPI	(DEFAULT)	Advanced Configuration and Power Interface (ACPI) is activated.

➔ **x Standby Mode [Disabled]**

The **Standby Mode** option can only be selected if the **Power Management** option is set to Legacy. The **Standby Mode** specifies the amount of time the system can be inactive before the system enters standby mode. The **Standby Mode** options are:

- Disabled (DEFAULT)
- 1 Sec
- 5 Sec
- 10 Sec
- 15 Sec
- 30 Sec
- 45 Sec
- 1 Min
- 5 Min
- 10 Min

- 15 Min
- 30 Min
- 45 Min
- 60 Min
- 90 Min
- 120 Min

➔ **x Suspend Mode [Disabled]**

The **Suspend Mode** option can only be selected if the **Power Management** option is set to Legacy. The **Suspend Mode** specifies the amount of time the system can be inactive before the system enters suspend mode. The **Suspend Mode** options are:

- Disabled (DEFAULT)
- 1 Sec
- 5 Sec
- 10 Sec
- 15 Sec
- 30 Sec
- 45 Sec
- 1 Min
- 5 Min
- 10 Min
- 15 Min
- 30 Min
- 45 Min
- 60 Min
- 90 Min
- 120 Min

➔ **Modem Use of IRQ [N/A]**

Use **the Modem Use of IRQ** to select the IRQ address for the system modem. The following IRQ addresses are available.

- N/A (DEFAULT)
- 3
- 4
- 5
- 7
- 9
- 10
- 11

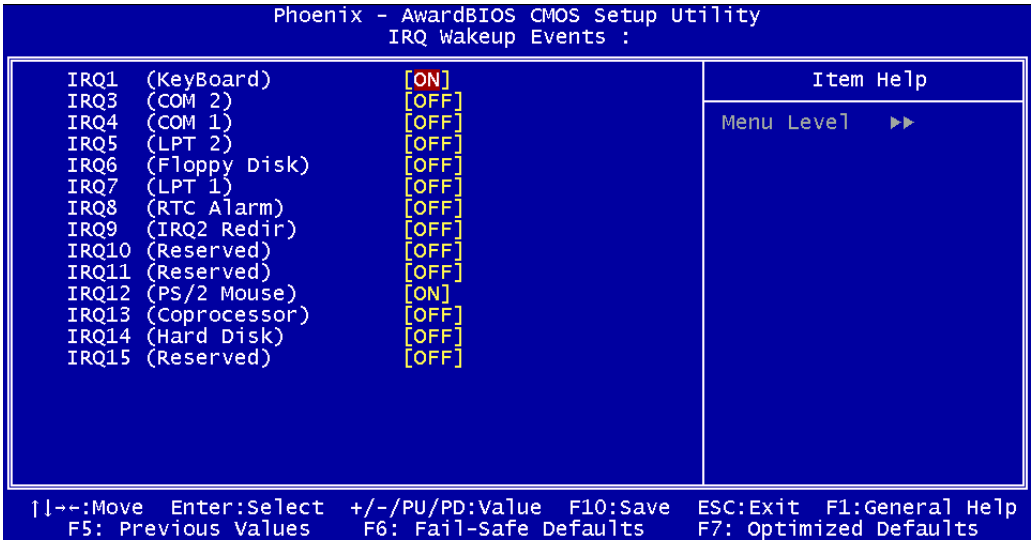
➔ **Power-On by Alarm [Disabled]**

Use the **Power-On by Alarm** option to specify when the computer is roused from a suspended state.

➔ **Disabled**	(DEFAULT)	The real time clock (RTC) cannot generate a wake event
➔ **Enabled**		If selected, the following appears with values that can be selected: ➔ **RTC Alarm Date (Days)** ➔ **System Time** After setting the alarm, the computer will turn itself on from a suspend state when the alarm goes off.

➔ **IRQ Wakeup Events [Press Enter]**

To view the **IRQ Wakeup Events** options press **ENTER**.


Phoenix - AwardBIOS CMOS Setup Utility
IRQ Wakeup Events :
IRQ1 (KeyBoard) [ON]
IRQ3 (COM 2) [OFF]
IRQ4 (COM 1) [OFF]
IRQ5 (LPT 2) [OFF]
IRQ6 (Floppy Disk) [OFF]
IRQ7 (LPT 1) [OFF]
IRQ8 (RTC Alarm) [OFF]
IRQ9 (IRQ2 Redir) [OFF]
IRQ10 (Reserved) [OFF]
IRQ11 (Reserved) [OFF]
IRQ12 (PS/2 Mouse) [ON]
IRQ13 (Coprocessor) [OFF]
IRQ14 (Hard Disk) [OFF]
IRQ15 (Reserved) [OFF]
Item Help
Menu Level ▶▶
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

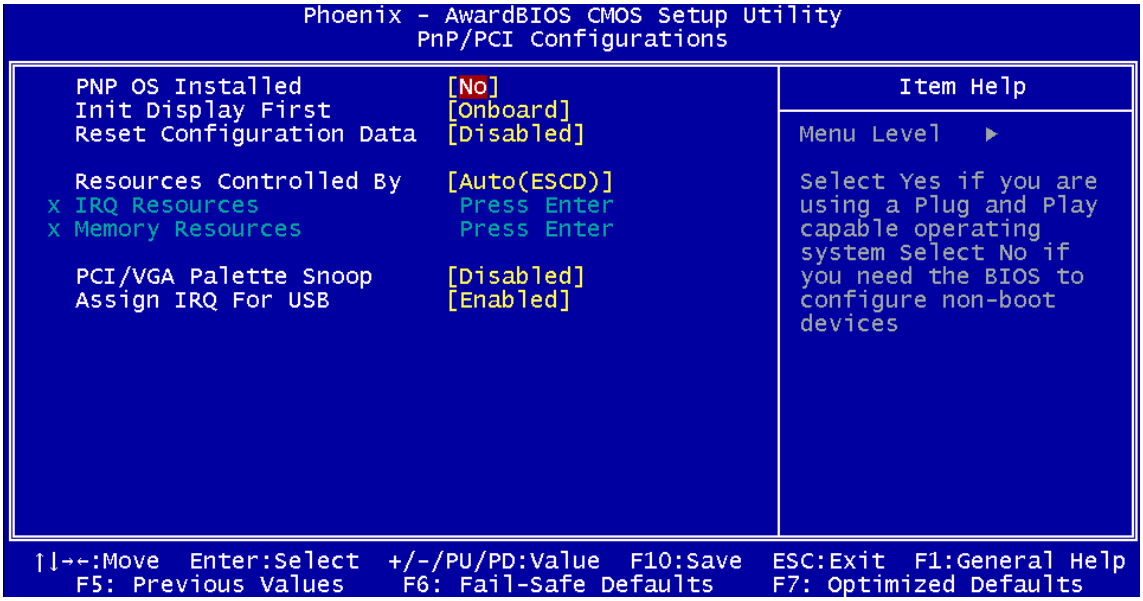
BIOS Menu 11: IRQ Wakeup Events

If the Primary INTR was selected as ON, the IRQs can be monitored and used to generate wake events. The following IRQs are monitored:

- IRQ1 (Keyboard) ON
- IRQ3 (COM 2) OFF
- IRQ4 (COM 1) OFF
- IRQ5 (LPT 2) OFF
- IRQ6 (Floppy Disk) OFF
- IRQ7 (LPT) OFF
- IRQ8 (RTC Alarm) OFF
- IRQ9 (IRQ2 Redir) OFF
- IRQ10 (Reserved) OFF
- IRQ11 (Reserved) OFF
- IRQ12 (PS/2 Mouse) ON
- IRQ13 (Coprocessor) OFF
- IRQ14 (Hard Disk) OFF
- IRQ15 (Reserved) OFF

6.7 PnP/PCI Configurations

Use the **PnP/PCI Configurations** menu (**BIOS Menu 12**) to set the plug and play, and PCI options.


Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations
PNP OS Installed [No]
Init Display First [Onboard]
Reset Configuration Data [Disabled]
Resources Controlled By [Auto(ESCD)]
x IRQ Resources Press Enter
x Memory Resources Press Enter
PCI/VGA Palette Snoop [Disabled]
Assign IRQ For USB [Enabled]
Item Help
Menu Level ▶
Select Yes if you are using a Plug and Play capable operating system Select No if you need the BIOS to configure non-boot devices
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

BIOS Menu 12: PnP/PCI Configurations

➔ **PNP OS Installed [No]**

The **PNP OS Installed** option determines whether the Plug and Play devices connected to the system are configured by the operating system or the BIOS.

➔ **No** (DEFAULT) If the operating system does not meet the Plug and Play specifications, BIOS configures all the devices in the system.

➔ **Yes** Set this option if the system is running Plug and Play aware operating systems. The operating system changes the interrupt, I/O, and DMA settings.

➔ **Init. Display First [Onboard]**

Use the **Init. Display First** option to select the graphics controller the system uses as a primary boot device. The options are:

- PCI Slot
- Onboard (DEFAULT)

➔ **Reset Configuration Data [Disabled]**

Use the **Reset Configuration Data** option to reset the Extended System Configuration Data (ESCD) when exiting setup if booting problems occur after a new add-on is installed.

➔ **Disabled** (DEFAULT) ESCD will not be reconfigured

➔ **Enabled** ESCD will be reconfigured after you exit setup

➔ **Resources Controlled By [Auto (ESCD)]**

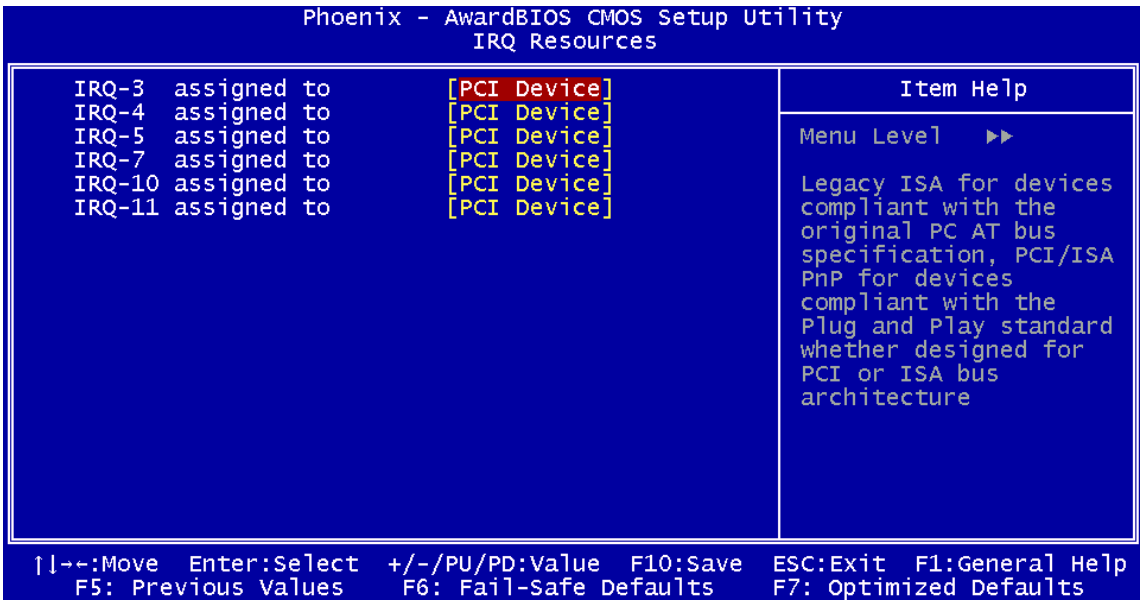
Use the **Resources Controlled By** option to either manually configure all the boot and plug and play devices, or allow BIOS to configure these devices automatically. If BIOS is allowed to configure the devices automatically IRQs, DMA and memory base address fields cannot be set manually.

➔ **Auto(ESCD)** (DEFAULT) BIOS automatically configures plug and play devices as well as boot devices.

➔ **Manual** Manually configure the plug and play devices and any other boot devices.

➔ **x IRQ Resources [Press Enter]**

The **IRQ Resources** option (**BIOS Menu 13**) can only be selected if the **Resources Controlled By** option is set to **Manual**.


Phoenix - AwardBIOS CMOS Setup Utility
IRQ Resources
IRQ-3 assigned to [PCI Device]
IRQ-4 assigned to [PCI Device]
IRQ-5 assigned to [PCI Device]
IRQ-7 assigned to [PCI Device]
IRQ-10 assigned to [PCI Device]
IRQ-11 assigned to [PCI Device]
Item Help
Menu Level ▶▶
Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

BIOS Menu 13: IRQ Resources

The **IRQ Resources** menu has the following options:

- IRQ-3 assigned to
- IRQ-4 assigned to
- IRQ-5 assigned to
- IRQ-7 assigned to
- IRQ-10 assigned to
- IRQ-11 assigned to

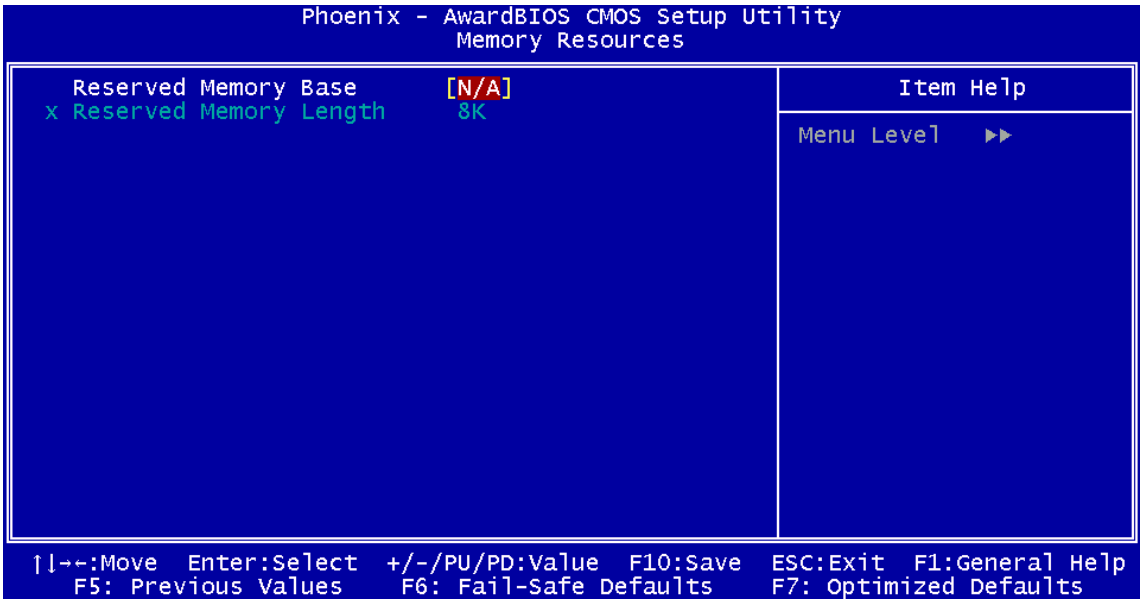
The above options all have the following default options.

➔ **PCI Device** (DEFAULT) The IRQ is assigned to legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PNP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

➔ **Reserved** The IRQ is reserved by BIOS.

➔ **x Memory Resources [Press Enter]**

The **Memory Resources** menu (**BIOS Menu 14**) can only be accessed if the **Resources Controlled By** option is set to **Manual**. Use **Memory Resources** to select a base address and the length for the memory area used by a peripheral that requires high memory.


Phoenix - AwardBIOS CMOS Setup Utility
Memory Resources
Reserved Memory Base [N/A]
x Reserved Memory Length 8K
Item Help
Menu Level ▸▸
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

BIOS Menu 14: Memory Resources

The menu has two configurable options:

- Reserved Memory Base
- Reserved Memory Length

➔ **Reserved Memory Base [N/A]**

The **Reserved Memory Base** option specifies the base address for the peripheral device.

The **Reserved Memory Base** options are:

- N/A (DEFAULT)
- C800
- CC00
- D000

- D400
- D800
- DC00

➔ **x Reserved Memory Length [8K]**

The **Reserved Memory Length** option can only be accessed if the **Reserved Memory Base** option is not set to **N/A**. The **Reserved Memory Length** specifies the amount of memory reserved for the peripheral device. The **Reserved Memory Length** options:

- 8K (DEFAULT)
- 16K
- 32K
- 64K

➔ **PCI/VGA Palette Snoop [Disabled]**

Use the **PCI/VGA Palette Snoop** option enables the system to determine whether or not some special VGA cards, high-end hardware MPEG decoders and other similar devices are allowed to look at the VGA palette on the video card so these devices can determine what colors are in use. This option is needed *very* rarely and should be left "Disabled" unless a video device specifically requires the setting to be enabled upon installation.

➔ **Disabled**	(DEFAULT)	Does not allow the graphics devices to examine the VGA palette on the graphics card.
➔ **Enabled**		Allows the graphics devices to examine the VGA palette on the graphics card.

➔ **Assign IRQ for USB [Enabled]**

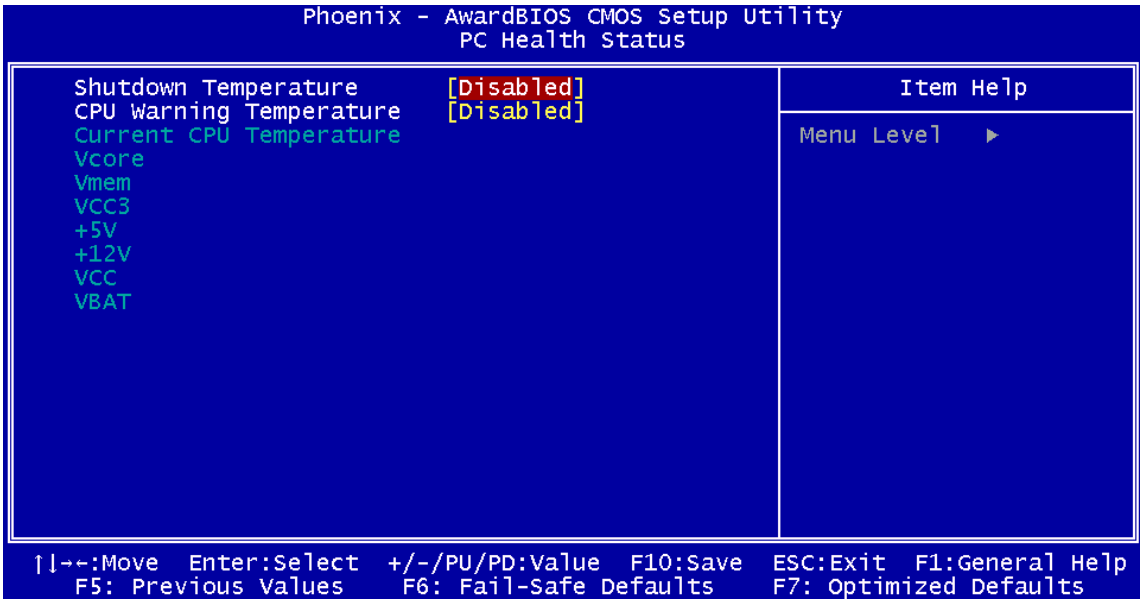
Use the **Assign IRQ for USB** option to enable the system to allocate an interrupt address to the system USB display.

➔ **Disabled** No IRQ is assigned to the USB

➔ **Enabled** (DEFAULT) An IRQ is assigned to the USB

6.8 PC Health Status

The **PC Health Status** menu (**BIOS Menu 15**) has no user configurable options, but shows system operating parameters that are essential to the stable operation of the system.



BIOS Menu 15: PC Health Status

The following system parameters are monitored by the **PC Health Status** menu.

➔ **Shutdown Temperature [Disabled]**

Use the **Shutdown Temperature** option to specify at what CPU temperature should the system shut down to protect the system from overheating. The following configuration options are available:

- 60°C/140°F
- 65°C/149°F
- 70°C/158°F
- Disabled (DEFAULT)

➔ **CPU Warning Temperature [Disabled]**

Use the **CPU Warning Temperature** option to specify at what CPU temperature should the system issue a warning. The following configuration options are available:

- Disabled (DEFAULT)
- 50°C/122°F
- 53°C/127°F
- 56°C/133°F
- 60°C/140°F
- 63°C/145°F
- 66°C/151°F
- 70°C/158°F

➔ **System Temperature**

The following temperatures are monitored:

- Current CPU Temperature

➔ **Voltages**

The following voltages are monitored:

- Vcore
- Vmem
- VCC3
- +5V
- +12 V
- VCC
- VBAT

Chapter

7

Software Drivers

7.1 Available Software Drivers

NOTE:

The content of the CD may vary throughout the life cycle of the product and is subject to change without prior notice. You may visit the IEI website or contact technical support for the latest updates.

There are five software drivers for the NANO-GX motherboard installed in the subsystem:

- VGA Driver
- Audio Driver
- LAN Driver
- SATA/RAID Driver
- ISA Driver

All five drivers can be found on the CD that came with the motherboard. To install the drivers please follow the instructions in the sections below.

NOTE:

The installation instructions below are for systems running Windows XP. The Windows XP kernel may contain some of the drivers already and when the system boots up automatically select the drivers and guide the user through the installation process.

7.2 VGA Driver Installation

NOTE:

The VGA driver installation instructions are for a system running Windows XP.

To install the VGA driver, please follow the steps below.

Step 1: Turn the system on.

Step 2: After the system with Windows XP is turned on for the first time, the message in **Figure 7-1** appears.

Hardware Update Wizard
Welcome to the Hardware Update Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

Figure 7-1: VGA Driver Start Up Screen

Step 3: If the system should access the Windows Update site, select either the first

option or second option in **Figure 7-1**. If the system should not access the Windows Update site, select the third option in **Figure 7-1**.

Step 4: Insert the disk that came with the system.

Step 5: Click **NEXT** to continue.

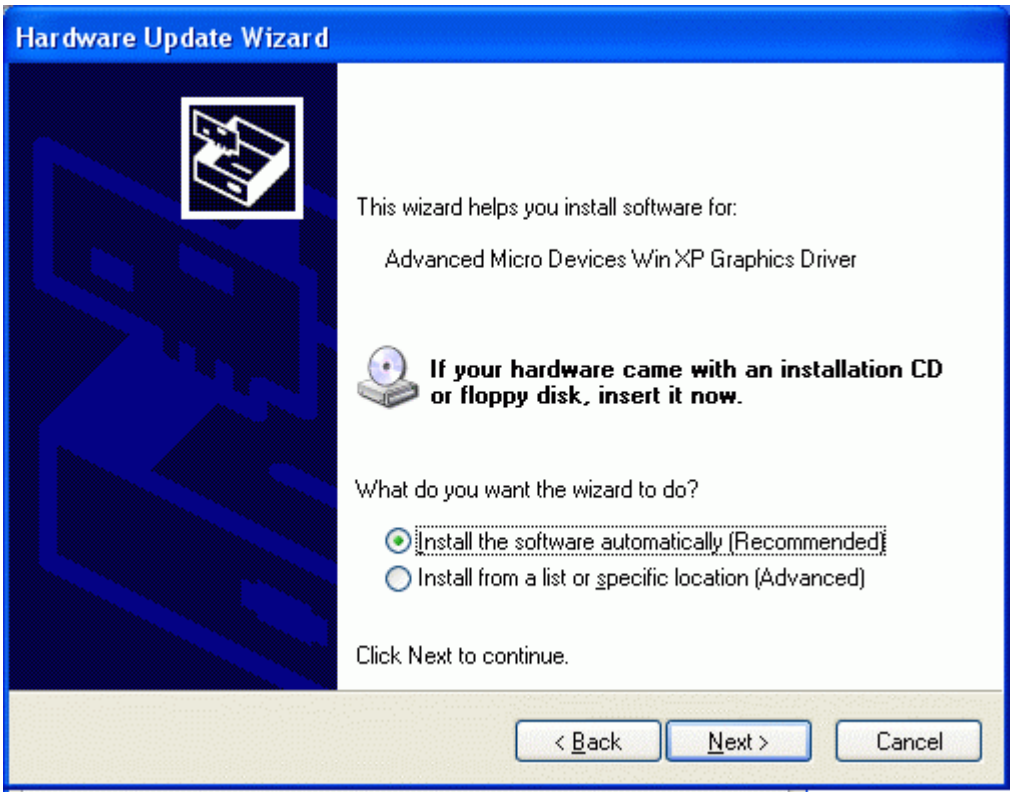

Hardware Update Wizard
This wizard helps you install software for:
Advanced Micro Devices Win XP Graphics Driver
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

Figure 7-2: Select the Installation Method

Step 6: Select if the system should automatically install the software or if the software should be installed form a list or specific location as shown in **Figure 7-2**.

Step 7: Click **NEXT** to continue.

Step 8: The system starts to install the driver. See **Figure 7-3**.

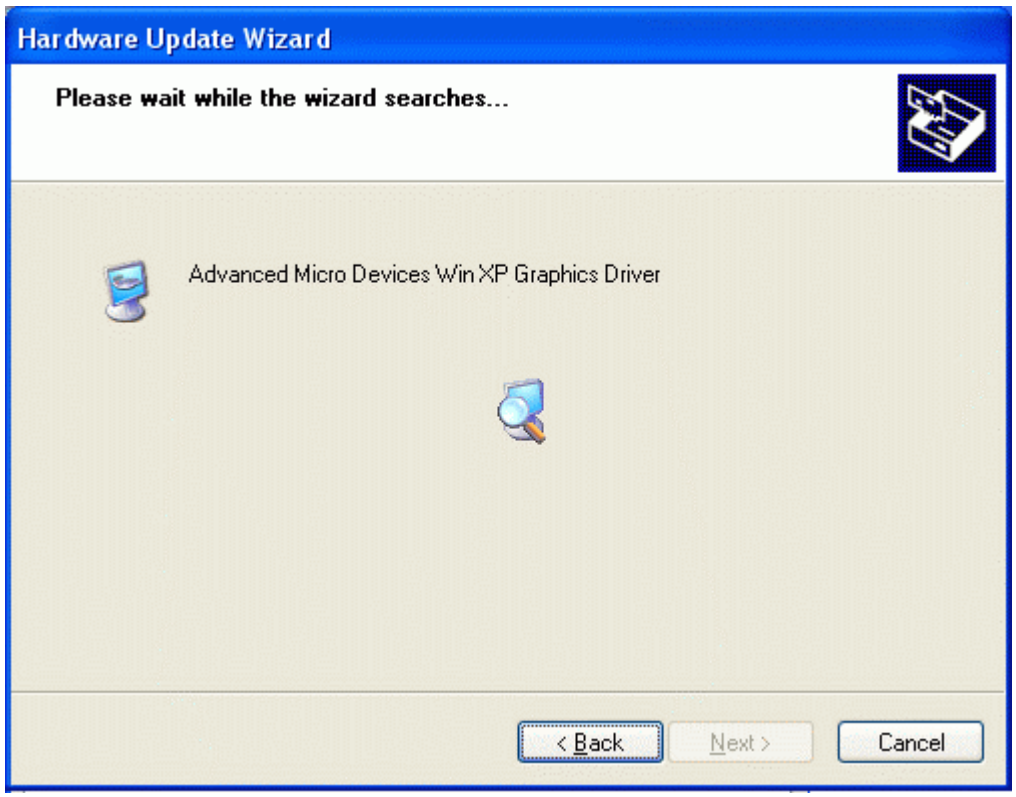


Figure 7-3: VGA Driver Installation

Step 9: If the driver cannot be located by the system, the user is prompted to specify the location of the driver. See **Figure 7-4**.

Files Needed
The file 'gxm.sys' on Advanced Micro Devices Win XP Graphics Display Driver Installation DISK (VIDEO) is needed.
OK
Cancel
Type the path where the file is located, and then click OK.
Copy files from:
d:\amd\gx2\xpe\gx2_xp_xpe_graphics_v1.04.00
Browse...

Figure 7-4: VGA Driver Installation

Step 10: Select Browse. The driver is located on the CD in the following directory:

E:\VGA\GX2\XPe\GX2_XP_XPe_Graphics_v1.04.00

Step 11: Once located the driver is installed.

Step 12: When the driver installation is complete, click **FINISH** to close the installation wizard. See **Figure 7-5**.

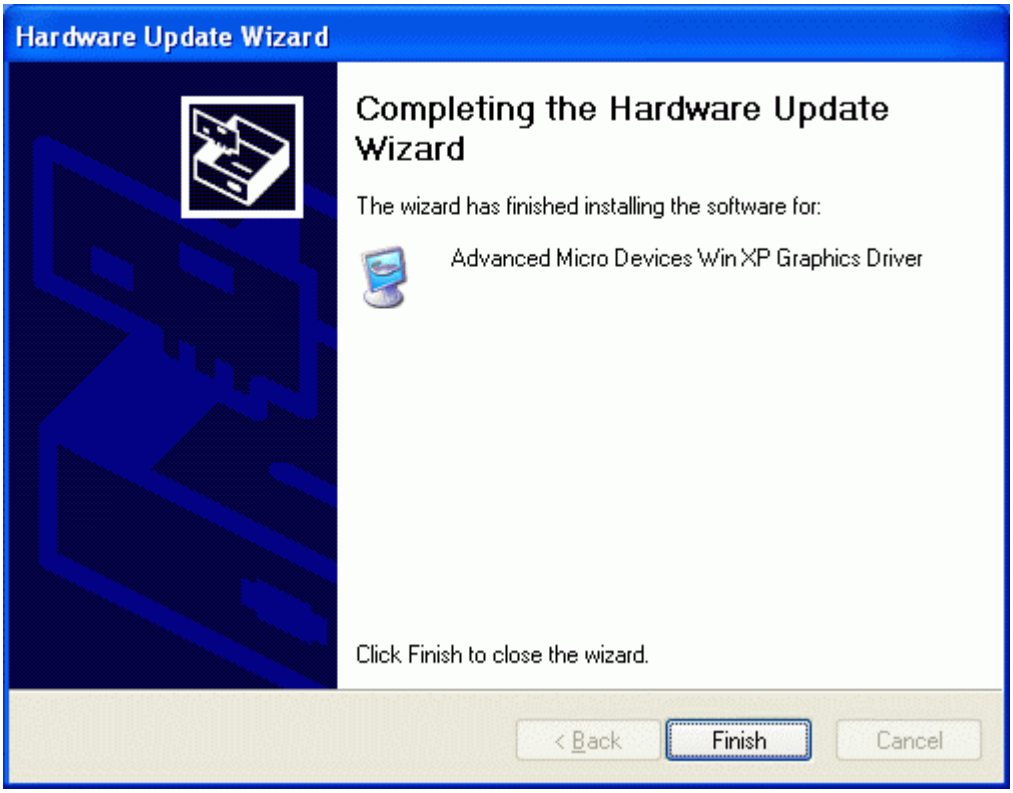

Hardware Update Wizard
Completing the Hardware Update Wizard
The wizard has finished installing the software for:
Advanced Micro Devices Win XP Graphics Driver
Click Finish to close the wizard.
< Back
Finish
Cancel

Figure 7-5: Close the VGA Driver Installation Wizard

7.3 Audio Driver Installation

NOTE:

The Audio driver installation instructions are for a system running Windows XP.

To install the Audio driver, please follow the steps below.

Step 1: Turn the system on.

Step 2: After the system with Windows XP is turned on for the first time, the message in **Figure 7-6** appears.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

Figure 7-6: Audio Driver Start Up Screen

Step 3: If the system should access the Windows Update site, select either the first option or second option in **Figure 7-6**. If the system should not access the Windows Update site, select the third option in **Figure 7-6**.

Step 4: Insert the disk that came with the system.

Step 5: Click **NEXT** to continue.

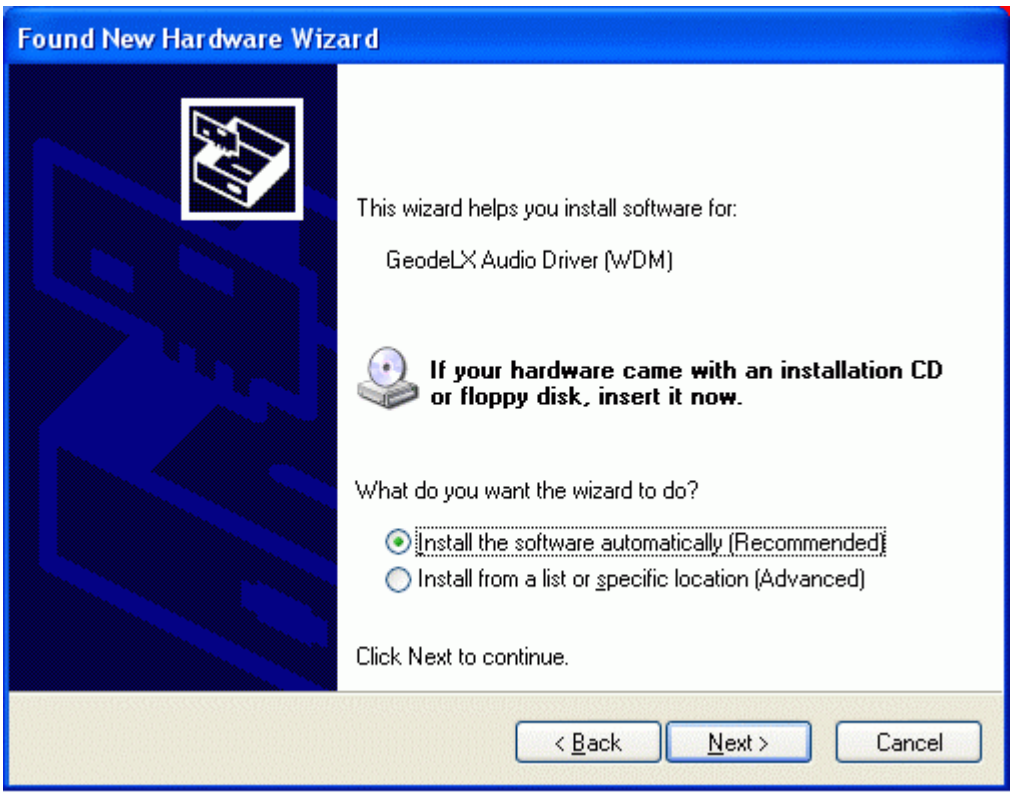

Found New Hardware Wizard
This wizard helps you install software for:
GeodeLX Audio Driver (WDM)
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

Figure 7-7: Select the Installation Method

Step 6: Select if the system should automatically install the software or if the software should be installed form a list or specific location as shown in **Figure 7-7**.

Step 7: Click **NEXT** to continue.

Step 8: The system starts to install the driver. See **Figure 7-3**.

NOTE:

In some cases the Audio driver may already be present in the OS. The OS then automatically detects and installs the driver (as in this case). If the OS does not have the driver, the disk needs to be inserted and the driver located in the following directory:

E:\Audio\GeodeLX_XP_XPe_WDM_Audio_v2.03.00

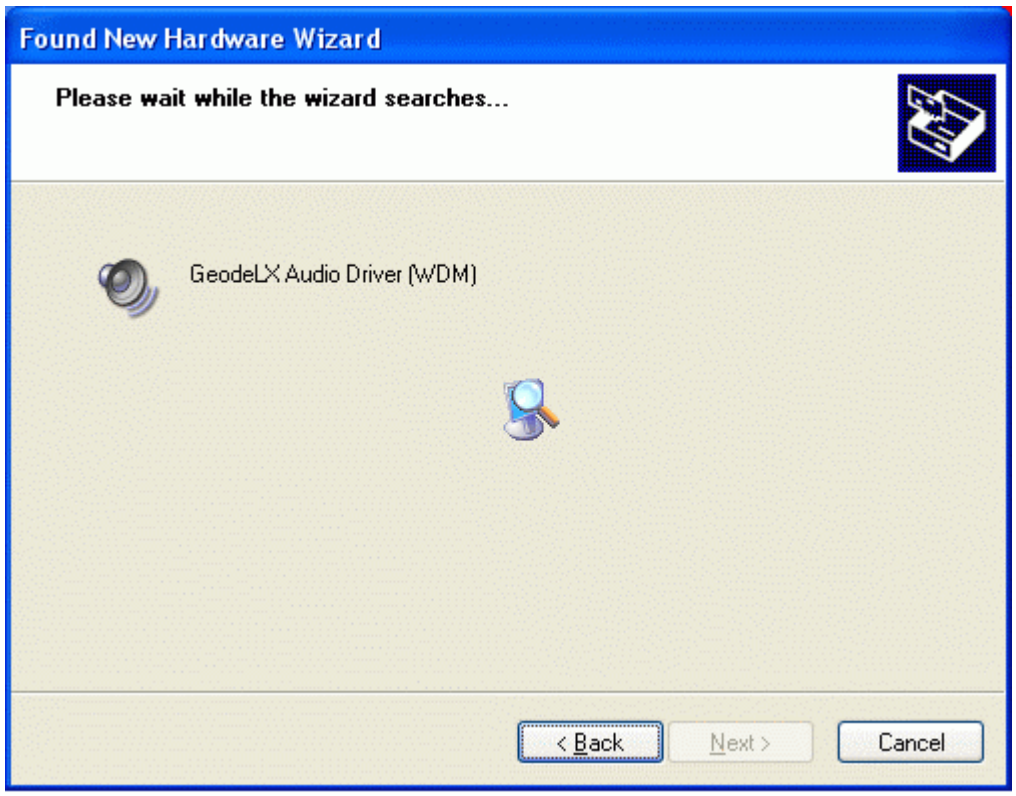


Figure 7-8: Audio Driver Installation

Step 9: When the driver installation is complete, click **FINISH** to close the installation wizard. See **Figure 7-9**.

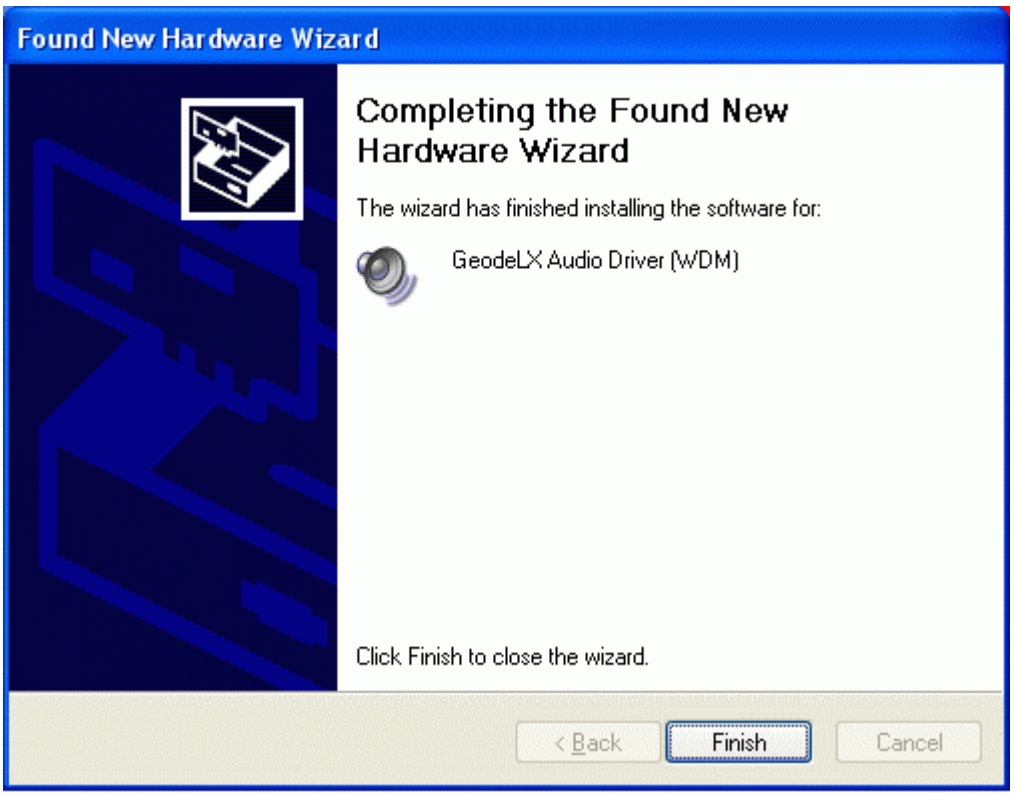

Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
GeodeLX Audio Driver (WDM)
Click Finish to close the wizard.
< Back
Finish
Cancel

Figure 7-9: Close the Audio Driver Installation Wizard

7.4 LAN Driver

To install the LAN driver, please follow the steps below.

Step 1: Insert the CD that came with the system.

Step 2: The screen shown in **Figure 7-10** appears.

Step 3: Select WAFER-GX in **Figure 7-10**.

Figure 7-10: CD Main Menu

Step 4: The window **Figure 7-11** appears listing all the available drives.

Step 5: Select LAN in the screen shown in **Figure 7-11**. Click **LAN** from the **AMD LX/GX CD Driver Menu** (**Figure 7-11**) to open a window to the **X:\LAN\Realtek** (where **X:** is the system CD drive folder on the driver CD.

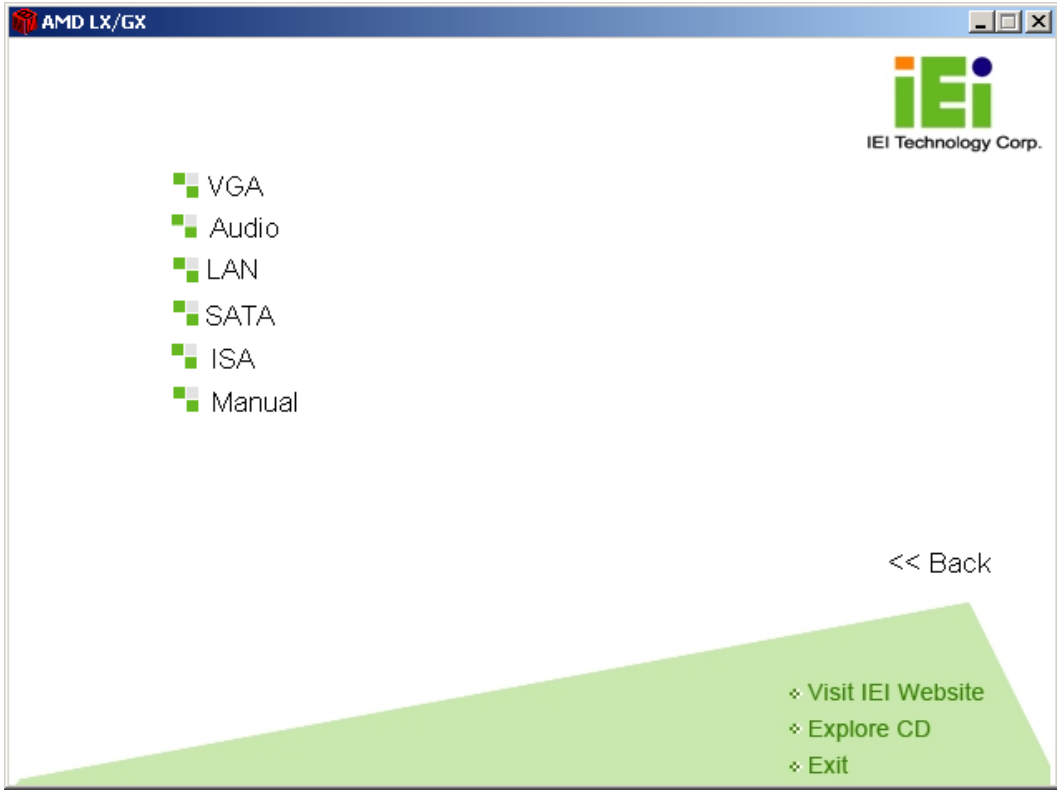


Figure 7-11: AMD LX/GX CD Driver Menu

Step 6: Open the **RTL8100C** folder.

Step 7: Locate the **Setup** program icon (**Figure 7-12**).

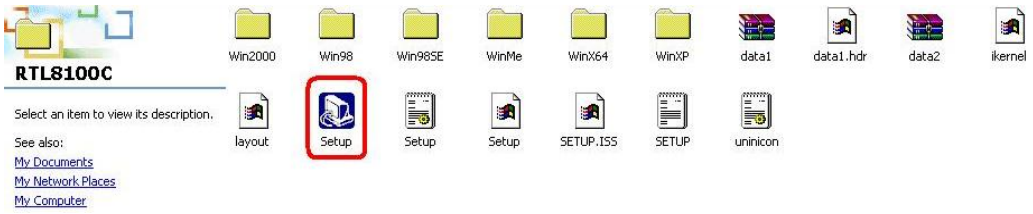


Figure 7-12: Locate the Setup Program Icon

Step 8: Double click the **Setup** program icon in **Figure 7-12**.

Step 9: The **Install Shield Wizard** is prepared to guide the user through the rest of the process (**Figure 7-13**).

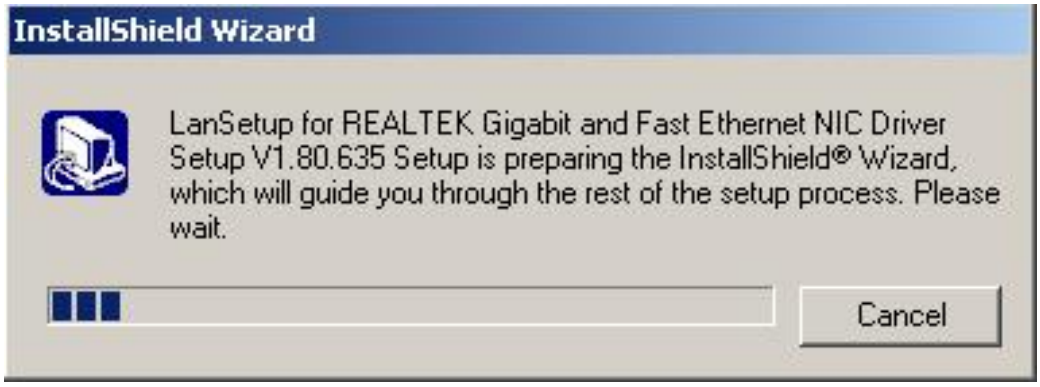

InstallShield Wizard
LanSetup for REALTEK Gigabit and Fast Ethernet NIC Driver Setup V1.80.635 Setup is preparing the InstallShield® Wizard, which will guide you through the rest of the setup process. Please wait.
Cancel

Figure 7-13: Preparing Setup Screen

Step 10: Once initialized, the **Install Wizard** welcome screen appears (**Figure 7-14**).

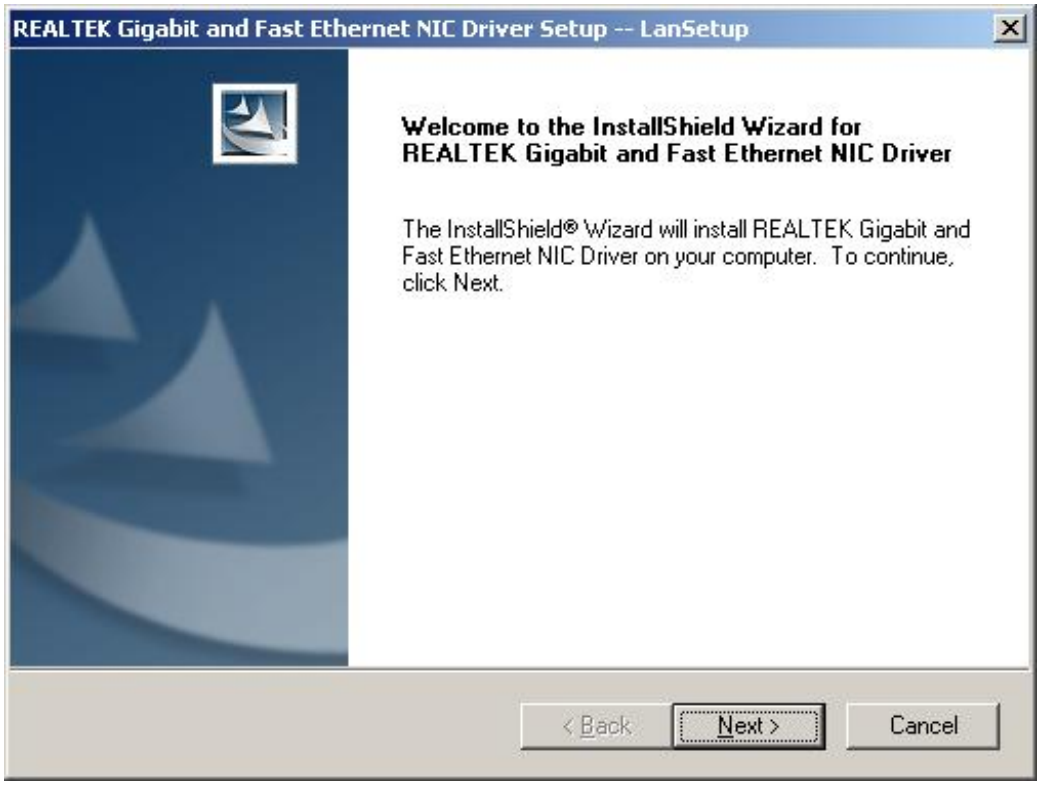

REALTEK Gigabit and Fast Ethernet NIC Driver Setup -- LanSetup
Welcome to the InstallShield Wizard for REALTEK Gigabit and Fast Ethernet NIC Driver
The InstallShield® Wizard will install REALTEK Gigabit and Fast Ethernet NIC Driver on your computer. To continue, click Next.
< Back
Next >
Cancel

Figure 7-14: Install Wizard Welcome Screen

Step 11: Click **NEXT** to continue the installation or **CANCEL** to stop the installation.

Step 12: The **Install Wizard** starts to install the LAN driver.

Step 13: Once the installation is complete, the **InstallShield Wizard Complete** screen

appears (**Figure 7-15**).

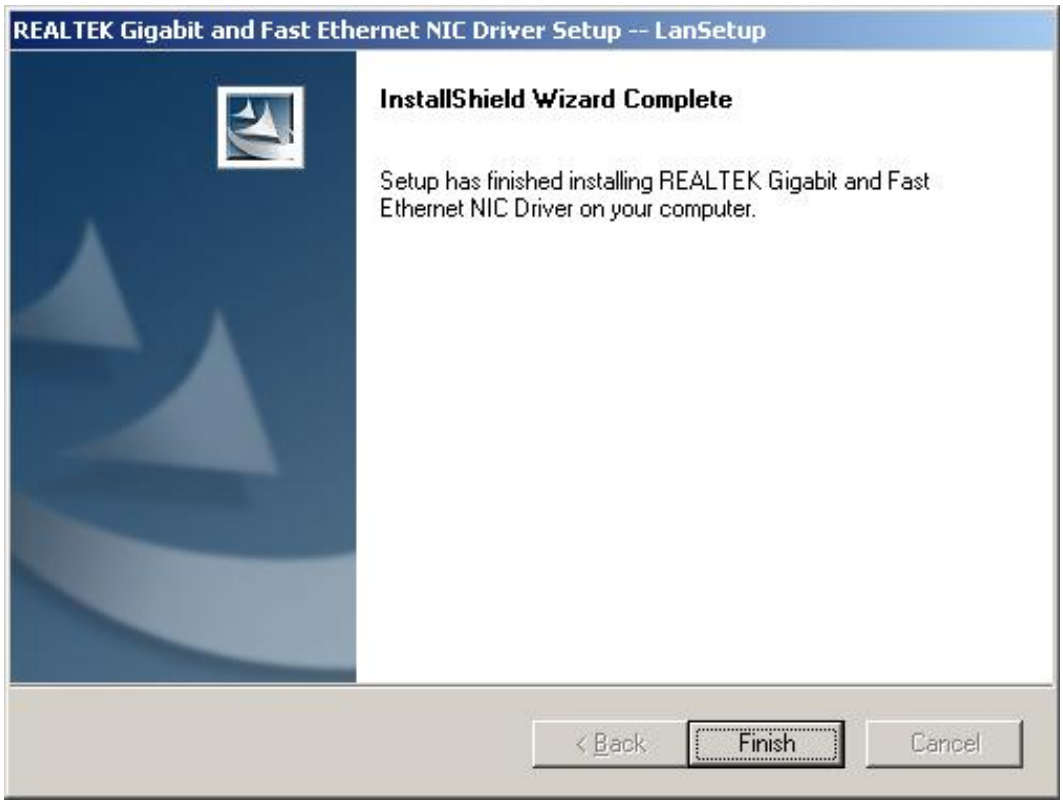

REALTEK Gigabit and Fast Ethernet NIC Driver Setup -- LanSetup
InstallShield Wizard Complete
Setup has finished installing REALTEK Gigabit and Fast Ethernet NIC Driver on your computer.
< Back
Finish
Cancel

Figure 7-15: Installing Screen

Step 14: Click **FINISH** to complete the installation and exit the **Install Shield Wizard**.

Step 15: Once the installation process is complete, the computer may be restarted immediately or later. Select the preferred option and click **FINISH** to complete the installation process and exit.

7.5 SATA/RAID Driver

To install the ALi SATA/RAID driver, please follow the steps below.

Step 1: Click **SATA** from the **AMD LX/GX CD Driver Menu** to open a window to the **X:\ALi_SATA_M5283** (where **X:** is the system CD drive) folder on the driver CD.

Step 2: Locate the **Setup** program icon (**Figure 7-16**).

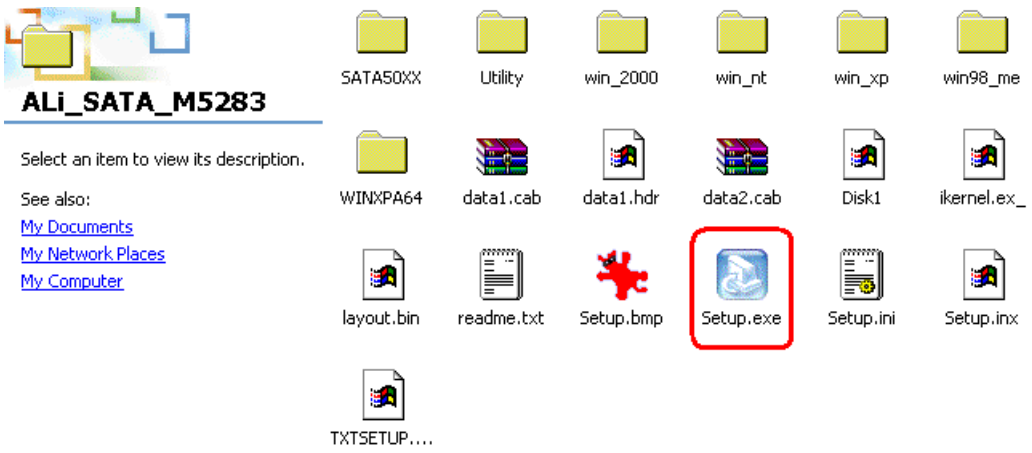


Figure 7-16: Locate the Setup Program Icon

Step 3: The **Install Shield Wizard** (**Figure 7-17**) is prepared to guide the user through the rest of the process.

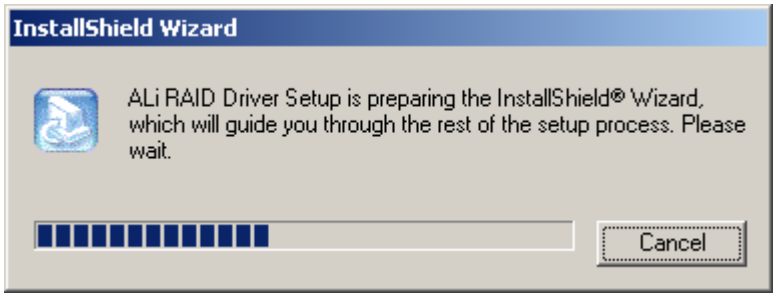

InstallShield Wizard
ALi RAID Driver Setup is preparing the InstallShield® Wizard, which will guide you through the rest of the setup process. Please wait.
Cancel

Figure 7-17: Preparing Setup Screen

Step 4: Once initialized, the **Install Wizard** welcome screen appears (**Figure 7-18**).

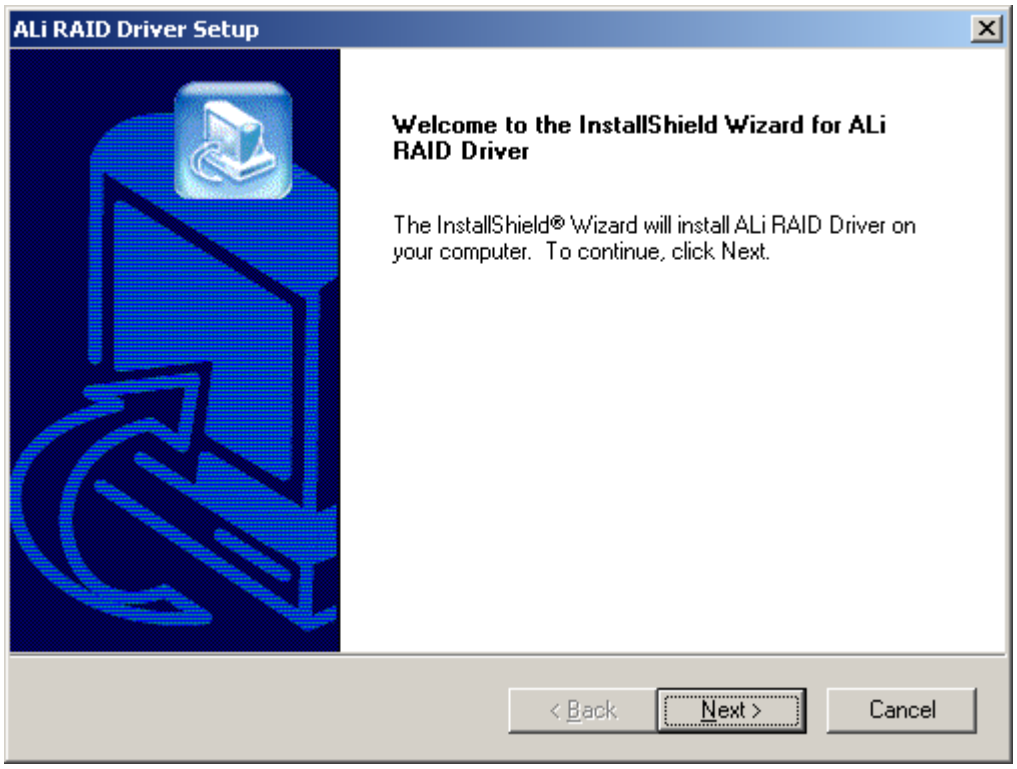

ALi RAID Driver Setup
Welcome to the InstallShield Wizard for ALi RAID Driver
The InstallShield® Wizard will install ALi RAID Driver on your computer. To continue, click Next.
< Back
Next >
Cancel

Figure 7-18: Install Wizard Welcome Screen

Step 5: Click **NEXT** to continue the installation or **CANCEL** to stop the installation.

Step 6: The **Install Wizard** starts to install the driver (**Figure 7-19**).

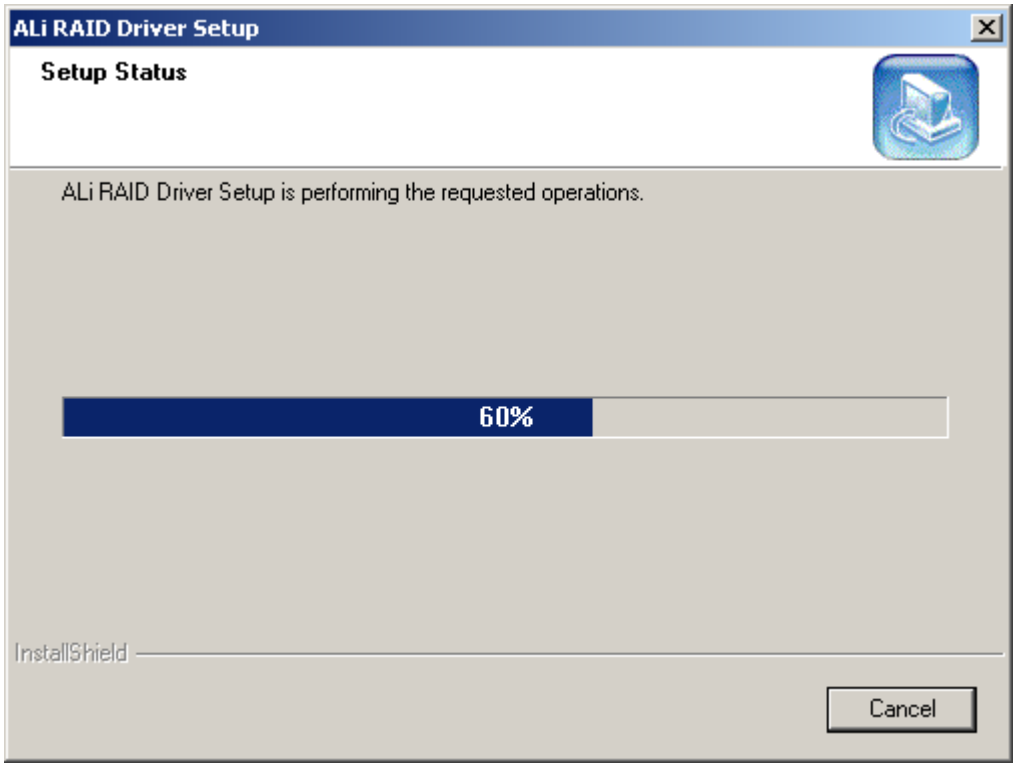


Figure 7-19: Installing Screen

Step 7: A "**Digital Signal Not Found**" screen appears (**Figure 7-20**). Click **YES** to continue the installation process.

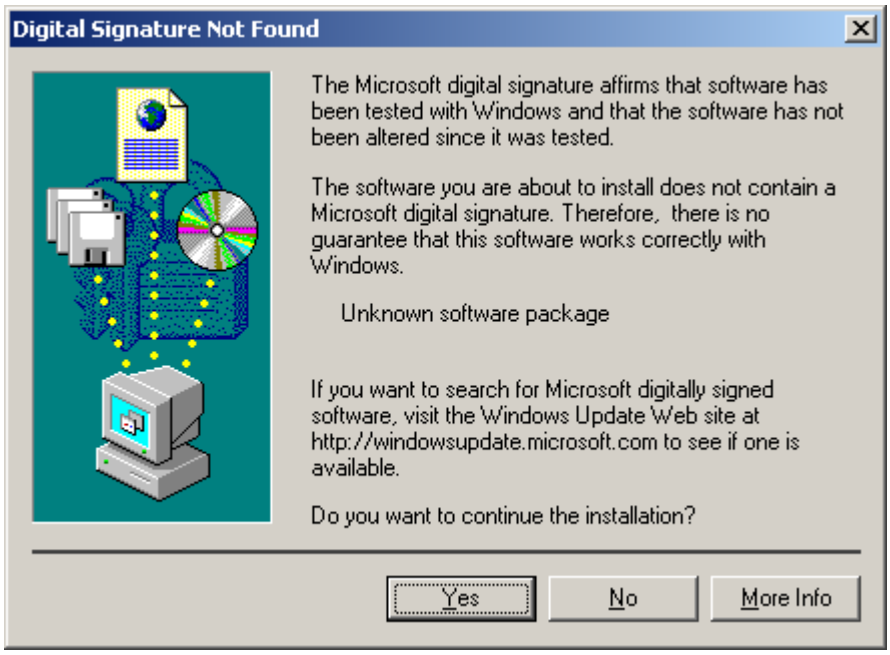

Digital Signature Not Found
The Microsoft digital signature affirms that software has been tested with Windows and that the software has not been altered since it was tested.
The software you are about to install does not contain a Microsoft digital signature. Therefore, there is no guarantee that this software works correctly with Windows.
Unknown software package
If you want to search for Microsoft digitally signed software, visit the Windows Update Web site at http://windowsupdate.microsoft.com to see if one is available.
Do you want to continue the installation?
Yes
No
More Info

Figure 7-20: RAID Driver Digital Signal

Step 8: Once the installation is complete, the **InstallShield Wizard Complete** screen appears (**Figure 7-21**).

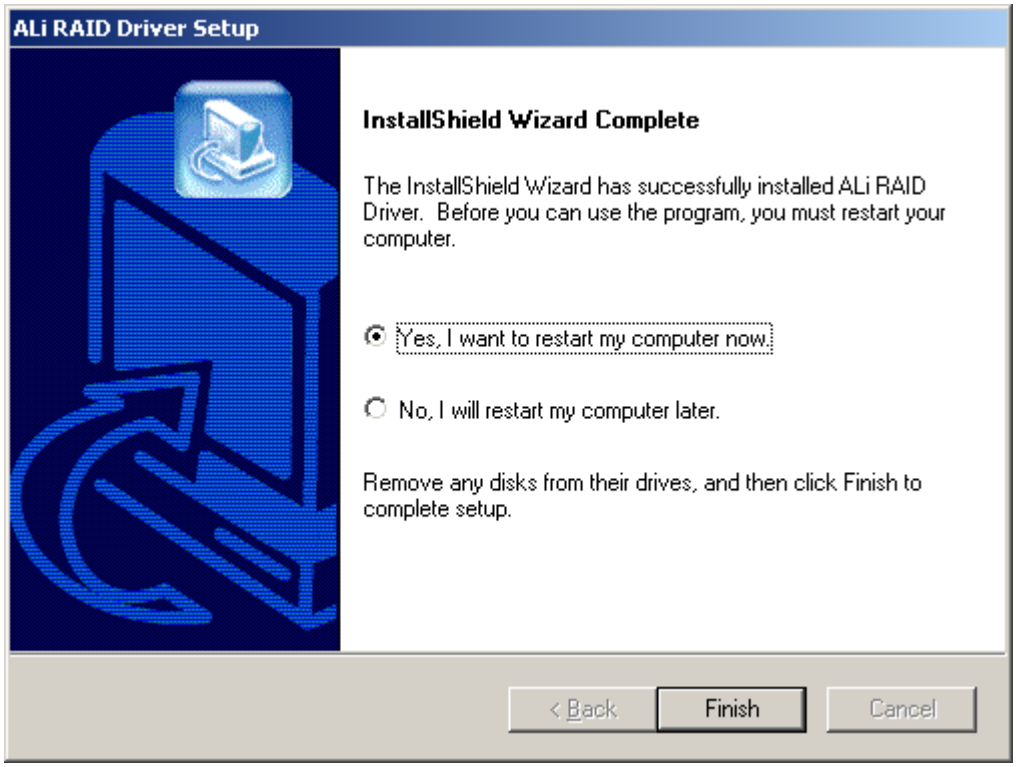

ALi RAID Driver Setup
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed ALi RAID Driver. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

Figure 7-21: InstallShield Wizard Complete Screen

Step 9: Once the installation process is complete, the computer may be restarted immediately or later. Select the preferred option and click **FINISH** to complete the installation process and exit the **Install Shield Wizard**.

7.6 ISA Driver

NOTE:

The IT8888 ISA Bridge driver installation instructions are for a system running Windows XP.

To install the IT8888 ISA Bridge driver please follow the steps below:

Step 1: Turn the system on.

Step 2: After the system with Windows XP is turned on for the first time, the message in **Figure 7-22** appears.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

Figure 7-22: IT8888 ISA Bridge Driver Start Up Screen

Step 3: If the system should access the Windows Update site, select either the first

option or second option in **Figure 7-22**. If the system should not access the Windows Update site, select the third option in **Figure 7-22**.

Step 4: Insert the disk that came with the system.

Step 5: Click **NEXT** to continue.

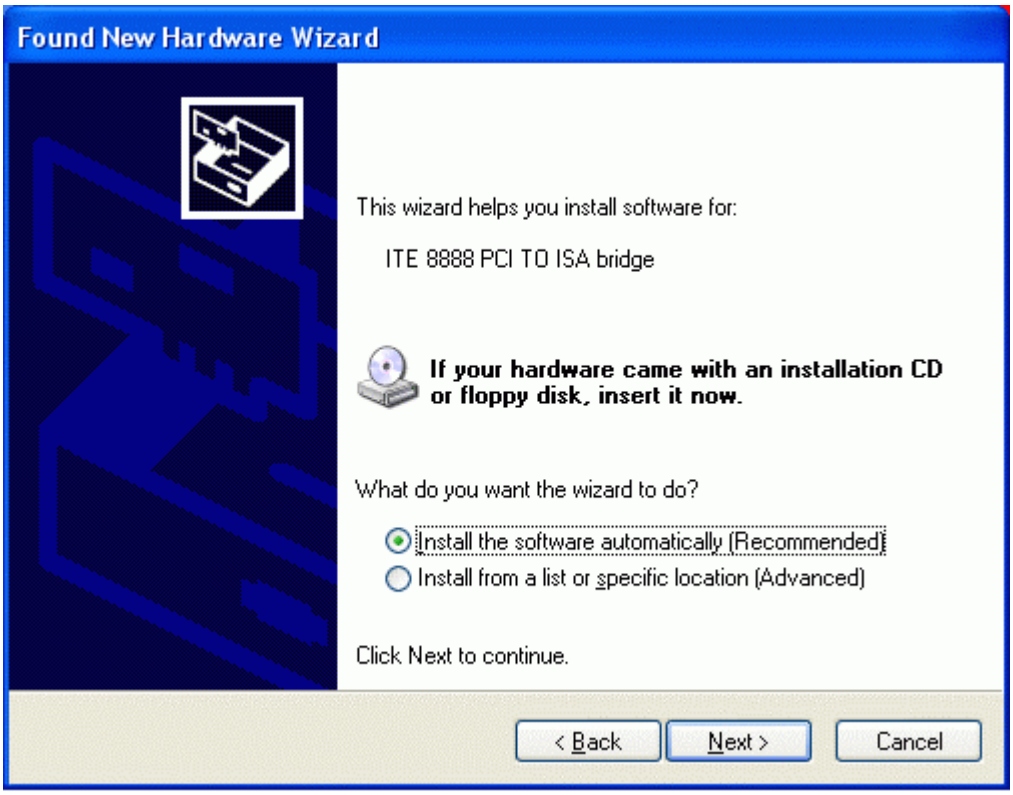

Found New Hardware Wizard
This wizard helps you install software for:
ITE 8888 PCI TO ISA bridge
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

Figure 7-23: Select the Installation Method

Step 6: Select if the system should automatically install the software or if the software should be installed form a list or specific location as shown in **Figure 7-23**.

Step 7: Click **NEXT** to continue.

Step 8: The system starts to install the driver. See **Figure 7-24**.

NOTE:

In some cases the IT8888 ISA Bridge driver may already be present in the OS. The OS then automatically detects and installs the driver (as in this case). If the OS does not have the driver, the disk needs to be inserted and the driver located in the following directory:

E:\IT8888

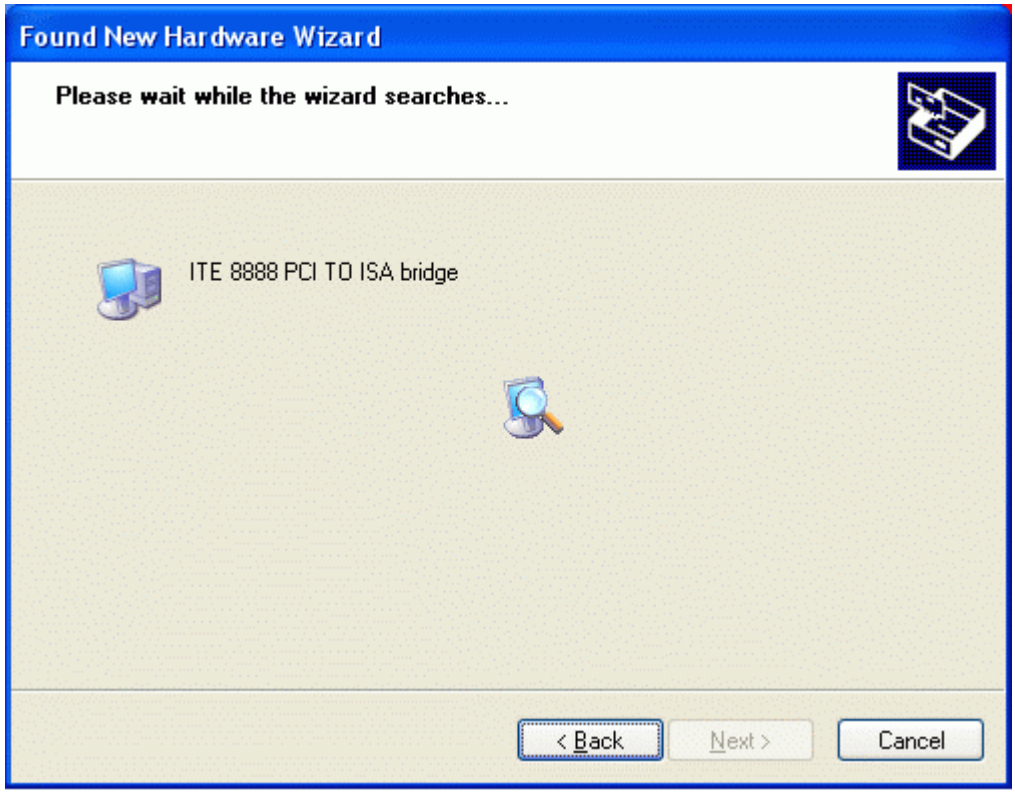


Figure 7-24: IT8888 ISA Bridge Driver Installation

Step 9: When the driver installation is complete, click **FINISH** to close the installation wizard. See **Figure 7-25**.

Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
ITE 8888 PCI TO ISA bridge
Click Finish to close the wizard.
< Back
Finish
Cancel

Figure 7-25: Close the IT8888 ISA Bridge Driver Installation Wizard

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Appendix

A

BIOS Configuration Options

A.1 BIOS Configuration Options

Below is a list of BIOS configuration options described in **Chapter 6**.

➔ **Load Fail-Safe Defaults** **121**

➔ **Load Optimized Defaults** **121**

➔ **Set Supervisor Password** **121**

➔ **Set User Password** **121**

➔ **Save & Exit Setup** **121**

➔ **Exit Without Saving** **122**

➔ **Date [Day mm:dd:yyyy]** **122**

➔ **Time [hh/mm/ss]** **122**

➔ **IDE Master and IDE Slave** **122**

➔ **Drive A/B [None]** **123**

➔ **Video** **123**

➔ **Halt On [All, But Keyboard]** **123**

➔ **Base Memory:** **124**

➔ **Extended Memory** **124**

➔ **Total Memory** **124**

➔ **IDE HDD Auto-Detection [Press Enter]** **125**

➔ **IDE Primary Master [Auto]** **125**

➔ **Access Mode [Auto]** **126**

➔ **Capacity** **127**

➔ **Cylinder** **127**

➔ **Head** **127**

➔ **Precomp** **127**

➔ **Landing Zone** **127**

➔ **Sector** **127**

➔ **Virus Warning [Disabled]** **129**

➔ **CPU Internal Cache [Enabled]** **129**

➔ **Quick Power On Self Test [Enabled]** **130**

➔ **SATA Boot ROM Control [Disabled]** **130**

➔ LAN Boot Rom [Enabled] 130
➔ Boot Device 130
➔ Boot Other Device [Enabled] 131
➔ Swap Floppy Drive [Disabled] 131
➔ Boot Up Floppy Seek [Enabled] 132
➔ Boot Up Numlock Status [On] 132
➔ Gate A20 Option [Fast] 132
➔ Typematic Rate Setting [Disabled] 133
➔ Typematic Rate (Chars/sec) [6] 133
➔ Typematic Delay (Msec) [250] 134
➔ Security Option [Setup] 134
➔ OS Select For DRAM > 64MB [Non-OS2] 134
➔ Video BIOS Shadow [Enabled] 135
➔ XXXXX-YYYYY Shadow [Disabled] 135
➔ Small Logo (EPA) Show [Disabled] 135
➔ Cyrix 6x86/MII CPUID [Enabled] 136
➔ CPU/MEM/PCI Frequency [333/222/33] 137
➔ Video Memory Size [8M] 137
➔ Flat Panel Configuration [Press Enter] 137
➔ OnBoard Audio [Enabled] 137
➔ Overcurrent Reporting [Disabled] 137
➔ Port 4 Assignment [Host] 138
➔ UART Port A [Disabled] 138
➔ Flat Panel Type [Auto] 139
➔ Resolution [640 x 480] 140
➔ Bus Width [8 Bit] 140
➔ Data Type [Normal] 140
➔ Refresh Rate [60Hz] 141
➔ HSYNC Polarity [Low] 141
➔ VSYNC Polarity Active [Low] 141
➔ SHFCLK Active Period [Free Running] 142
➔ LP Active Period [Free Running] 142

➔ On-Chip IDE Channel 1 [Enabled] 143
➔ Drive PIO Mode [Auto] 143
➔ IDE UDMA [Auto] 144
➔ IDE DMA transfer access [Enabled] 144
➔ IT8888 ISA Decode IO [Press Enter] 145
➔ IT8888 ISA Decode Memory [Press Enter] 145
➔ IDE HDD Block Mode [Enabled] 145
➔ Onboard FDC Controller [Enabled] 145
➔ Onboard Serial Port 1 [3F8/IRQ4] 145
➔ Onboard Serial Port 2 [2F8/IRQ3] 146
➔ UART Mode Select [Normal] 146
➔ x RxD, TxD Active [Hi,Lo] 146
➔ x IR Transmission Delay [Enabled] 147
➔ x UR2 Duplex Mode [Half] 147
➔ x Use IR Pins [IR-Rx2Tx2] 147
➔ Onboard Parallel Port [378/IRQ7] 147
➔ Parallel Port Mode [SPP] 148
➔ x EPP Mode Select [EPP1.7] 148
➔ x ECP Mode Use DMA [3] 149
➔ Onboard Serial Port 3 [3E8] 149
➔ Serial Port 3 Use IRQ [IRQ7] 149
➔ Onboard Serial Port 4 [2E8] 149
➔ Serial Port 4 Use IRQ [IRQ7] 150
➔ Onboard Serial Port 5 [4E0] 150
➔ Serial Port 5 Use IRQ [IRQ5] 150
➔ Onboard Serial Port 6 [4E8] 151
➔ Serial Port 6 Use IRQ [IRQ10] 151
➔ Decode IO Space N [Enabled] 153
➔ Decode IO Speed N [Slow Speed] 154
➔ Decode IO Address N 0:15 [xx] 154
➔ Decode IO Size N 154
➔ Decode Memory Space N [Disabled] 156

➔ Decode Memory Speed N [Fast Speed] 156
➔ Decode Memory Address N [xx] 156
➔ Decode Memory Size N [xx] 157
➔ ACPI Function [Enabled] 158
➔ Power Management [ACPI] 158
➔ x Standby Mode [Disabled] 158
➔ x Suspend Mode [Disabled] 159
➔ Modem Use of IRQ [N/A] 159
➔ Power-On by Alarm [Disabled] 160
➔ RTC Alarm Date (Days) 160
➔ System Time 160
➔ IRQ Wakeup Events [Press Enter] 160
➔ PNP OS Installed [No] 162
➔ Init. Display First [Onboard] 163
➔ Reset Configuration Data [Disabled] 163
➔ Resources Controlled By [Auto (ESCD)] 163
➔ x IRQ Resources [Press Enter] 163
➔ x Memory Resources [Press Enter] 165
➔ Reserved Memory Base [N/A] 165
➔ x Reserved Memory Length [8K] 166
➔ PCI/VGA Palette Snoop [Disabled] 166
➔ Assign IRQ for USB [Enabled] 166
➔ Shutdown Temperature [Disabled] 167
➔ CPU Warning Temperature [Disabled] 168
➔ System Temperature 168
➔ Voltages 168

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Appendix

B

DIO Connector

B.1 DIO Interface Introduction

The DIO connector on the NANO-GX is interfaced to GIO ports on the Winbond W83627EHG Super I/O chipset. The DIO has both 4-bit digital inputs and 4-bit digital outputs. The digital inputs and digital outputs are generally control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.

NOTE:

For further information, please refer to the Winbond datasheet for the Winbond W83627EHG Super I/O chipset.

B.2 DIO Connector Pinouts

The following table describes how the DIO connector pins are connected to the Super I/O GPIO port 1.

Pin No	Description	Super I/O Pin	Super I/O Pin Descripton
1	Ground	N/A	N/A
2	VCC	N/A	N/A
3	Output 0	GP14	General purpose I/O port 1 bit 4.
4	Output 1	GP15	General purpose I/O port 1 bit 5.
5	Output 2	GP16	General purpose I/O port 1 bit 6.
6	Output 3	GP17	General purpose I/O port 1 bit 7.
7	Input 0	GP10	General purpose I/O port 1 bit 0.
8	Input 1	GP11	General purpose I/O port 1 bit 1
9	Input 2	GP12	General purpose I/O port 1 bit 2
10	Input 3	GP13	General purpose I/O port 1 bit 3

B.3 Assembly Language Samples

B.3.1 Enable the DIO Input Function

The BIOS interrupt call INT 15H controls the digital I/O. An assembly program to enable digital I/O input functions is listed below.

MOV	**AX, 6F08H**	Sets the digital port as input
INT	**15H**	Initiates the INT 15H BIOS call

B.3.2 Enable the DIO Output Function

The BIOS interrupt call INT 15H controls the digital I/O. An assembly program to enable digital I/O output functions is listed below.

MOV	**AX, 6F09H**	Sets the digital port as output
MOV	**BL, 09H**	
INT	**15H**	Initiates the INT 15H BIOS call

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Appendix

C

Watchdog Timer

NOTE:

The following discussion applies to DOS environment. IEI support is contacted or the IEI website visited for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table C-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. While the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the Watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

NOTE:

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

Example program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

        MOV     AX, 6F02H       ;setting the time-out value
        MOV     BL, 30          ;time-out value is 48 seconds
        INT      15H
 ;
; ADD THE APPLICATION PROGRAM HERE
;
        CMP      EXIT_AP, 1     ;is the application over?
        JNE      W_LOOP         ;No, restart the application

        MOV     AX, 6F02H       ;disable Watchdog Timer
        MOV     BL, 0           ;
        INT      15H
;
; EXIT ;
```

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Appendix

D

Address Mapping

D.1 IO Address Map

I/O address Range	Description
000-01F	DMA Controller
020-021	Interrupt Controller
040-043	System time
060-06F	Keyboard Controller
070-07F	System CMOS/Real time Clock
080-09F	DMA Controller
0A0-0A1	Interrupt Controller
0C0-0DF	DMA Controller
0F0-0FF	Numeric data processor
1F0-1F7	Primary IDE Channel
2F8-2FF	Serial Port 2 (COM2)
378-37F	Parallel Printer Port 1 (LPT1)
3B0-3BB	Graphics Controller
3C0-3DF	Graphics Controller
3F6-3F6	Primary IDE Channel
3F7-3F7	Standard floppy disk controller
3F8-3FF	Serial Port 1 (COM1)

Table D-1: IO Address Map

D.2 1st MB Memory Address Map

Memory address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
F0000-FFFFF	System BIOS
1000000-	Extend BIOS

Table D-2: 1st MB Memory Address Map

D.3 IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	ACPI
IRQ2	Available	IRQ10	LAN
IRQ3	COM2	IRQ11	LAN/USB2.0/SATA
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	SMBus Controller	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Available	IRQ15	Secondary IDE

Table D-3: IRQ Mapping Table

D.4 DMA Channel Assignments

Channel	Function
0	Available
1	Available
2	Floppy disk (8-bit transfer)
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

Table D-4: IRQ Mapping Table

Appendix

E

External AC'97 Audio CODEC

E.1 Introduction

The motherboard comes with an onboard Realtek ALC203 CODEC. Realtek ALC203 is a 16-bit, full duplex AC'97 Rev. 2.3 compatible audio CODEC with a sampling rate of 48KHz.

E.1.1 Accessing the AC'97 CODEC

The CODEC is accessed through three phone jacks on the rear panel of the motherboard. The phone jacks include:

3. A LINE input shared with surround output
4. A MIC input shared with Center and LFE output
5. A LINE output
6. A MIC input line.

E.1.2 Driver Installation

The driver installation has been described in Section **7.3**.

After rebooting, the sound effect configuration utility appears in the **Windows Control Panel** (**Figure E-1**). If the peripheral speakers are properly connected, sound effects should be heard.

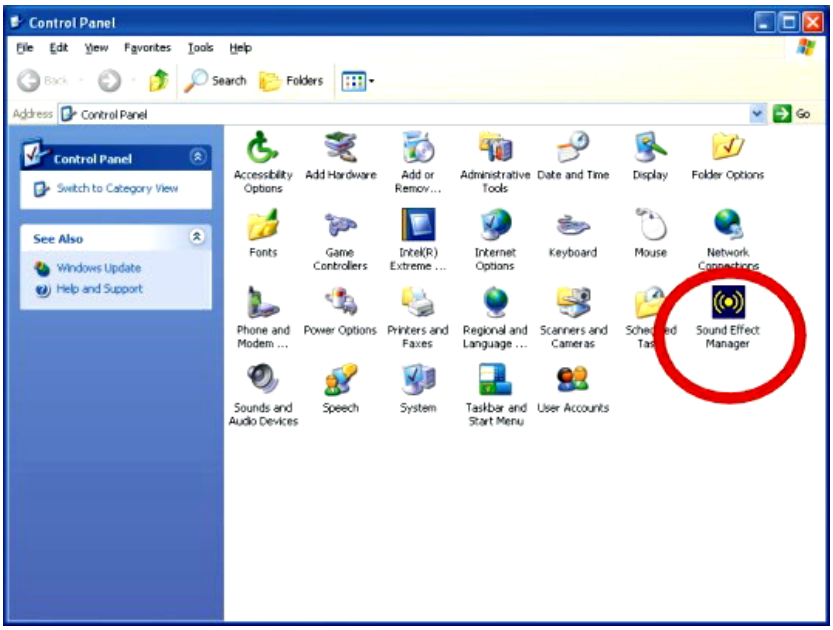

Figure E-1: Control Panel Sound Effect Manager

E.2 Sound Effect Configuration

E.2.1 Accessing the Sound Effects Manager

To access the Sound Effects Manager, please do the following:

Step 1: Install the audio CODEC driver.

Step 2: Click either:

- The **Sound Effect Manager** icon in the **Notification Area** of the system task bar (**Figure E-2**), or
- The **Sound Effect Manager** icon in the **Control Panel** (**Figure E-3**).

Figure E-2: Sound Effect Manager Icon [Task Bar]

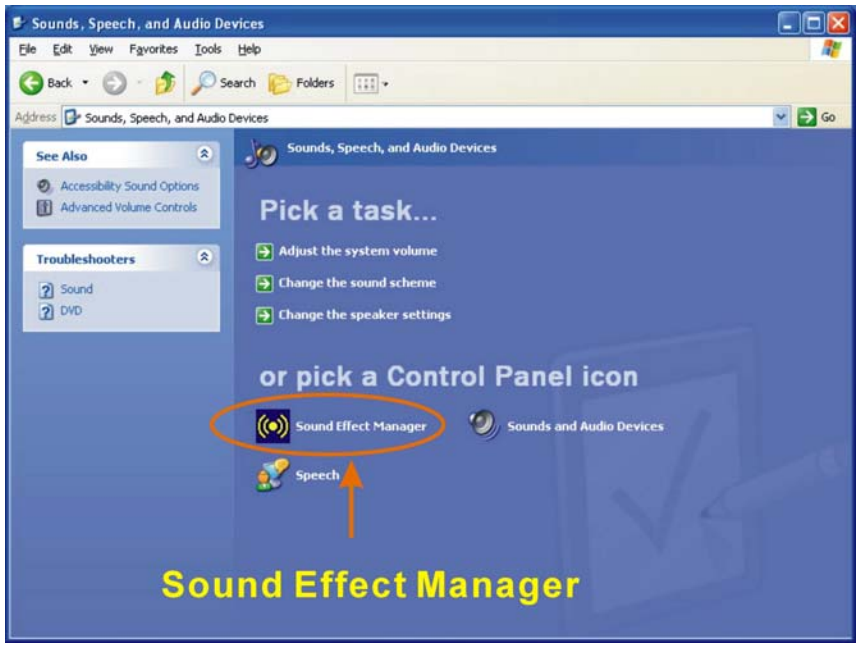

Figure E-3: Sound Effect Manager Icon [Control Panel]

Step 3: The sound effect manager appears (**Figure E-4**).

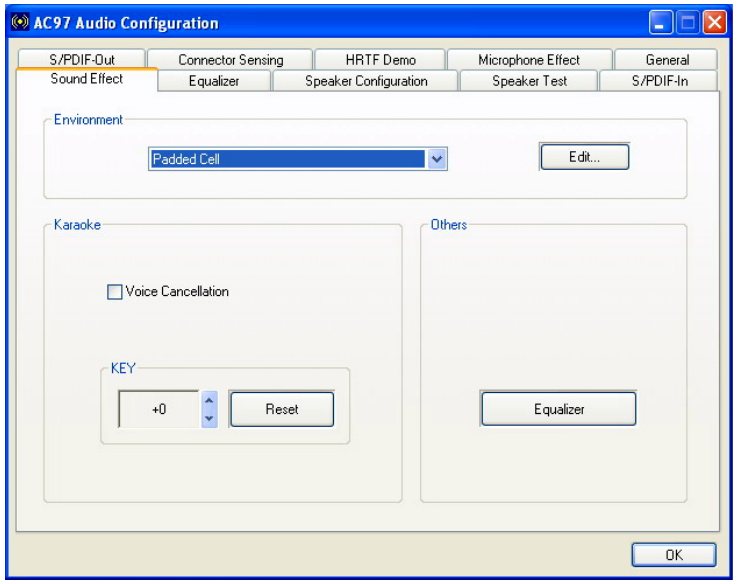

Figure E-4: Sound Effects Manager (ALC203)

NOTE:

The Sound Effect Manager shown in **Figure E-4** is for the RealTek ALC203 audio CODEC. Different CODECs may have different sound manager appearances.

The following section describes the different configuration options in the Sound Effect Manager.

E.2.2 Sound Effect Manager Configuration Options

The **Sound Effects Manager** enables configuration of the items listed below. To configure these items click the corresponding menu tab in the **Sound Effects Manager** (**Figure E-4)**.

NOTE:

The Karaoke Mode is configured in the **Sound Effect** menu. To access Karaoke configuration settings, click on the **Sound Effect** menu tab.

- Sound Effect
- Karaoke Mode
- Equalizer
- Speaker Configuration
- Speaker Test
- S/PDIF-In
- S/PDIF-Out
- Connector Sensing
- HRTF Demo
- Microphone Effect
- General

NOTE:

Not all RealTek Sound Effect Managers have all the above listed options. The Sound Effect Manager loaded onto the system may only have some of the options listed above.

Below is a brief description of the available configuration options in the **Sound Effects Manager**.

- ***Sound Effect***:- Select a sound effect from the 23 listed options in the drop down menu. Selected sound effect properties can be edited. To edit the sound effect click **EDIT**.
- ***Karaoke Mode***:- The **Karaoke Mode** is accessed in the Sound Effect window. The **Voice Cancellation** disables the vocal part of the music being played. The **Key adjustment** up or down arrow icons enables users to define a key that fits a certain vocal range.
- ***Equalizer Selection***:- Preset equalizer settings enable easy audio range settings. Ten frequency bands can be configured.
- ***Speaker Configuration***:- Multi-channel speaker settings are configured in this menu. Configurable options include:
  - Headphone
  - Channel mode for stereo speaker output
  - Channel mode for 4 speaker output
  - Channel mode for 5.1 speaker output
  - Synchronize the phonejack switch with speakers settings
- ***Speaker Test*:-** Each speaker connected to the system is tested individually to see if the 4-channel or 6-channel audio operates properly.
- ***S/PDIF-In & S/PDIF-Out***:- These functions are currently not supported.
- ***Connector Sensing***:- Realtek ALC203 detects if an audio device is plugged into the wrong connector. If an incorrect device is plugged in, a warning message appears.

- s***HRTF Demo***:- Adjust HRTF (Head Related Transfer Functions) 3D positional audio here before running 3D applications.
- ***Microphone Effect***:- Microphone noise suppression is enabled in this menu.
- ***General***:- General information about the installed AC'97 audio configuration utility is listed here.

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Appendix

F

ALi® RAID for SATA

F.1 Introduction

The ALi M5283 is a highly integrated disk drive controller that is capable of managing Parallel-ATA and Serial-ATA interface hard disk drives. The ALi controller supports PATA UDMA transfer mode up to mode 6 and SATA 1.0 disk drives. The ALi M5283 also comes with cost-effective RAID functionality that can be used to increase data read/write speed and to provide protection to data by distributing mirrored duplicates of data onto two disk drives (RAID1).

CAUTION!

A configured RAID volume (which may consist of multiple hard drives) appears to an operating system as a contingent storage space. The operating system will not be able to distinguish the physical disk drives contained in a RAID configuration.

F.1.1 Precautions

One key benefit a RAID configuration brings is that a single hard drive can fail within a RAID array without damaging data. With RAID1 array, a failed drive can be replaced and the RAID configuration restored.

WARNING!

Irrecoverable data loss will occur if a working drive is removed when trying to remove a failed drive. It is strongly recommended to mark the physical connections of all SATA disk drives. Drive locations can be identified by attaching stickers to the drive bays. If a drive member of a RAID array should fail, the failed drive can then be correctly identified.

CAUTION!

Do not accidentally disconnect the SATA drive cables. Carefully route the cables within the chassis to avoid system down time.

F.2 Features and Benefits

- Supports RAID levels 0, 1, and JBOD
- Supports connectivity to two disk drives
- Supported Operating Systems include: Windows 98/Me, Windows 2000, and Windows XP
- Windows-based software for RAID management

F.3 Accessing the ALi RAID Utility

The RAID BIOS version and disk drive information should appear after the system POST screen.

The BIOS disk drive information should look like the following:

ALi RAID BIOS V1.XX

(c) ALi Corporation 2005, All Rights Reserved.

Identifying IDE drives…

Channel 1 Master: Maxtor xxxxxx

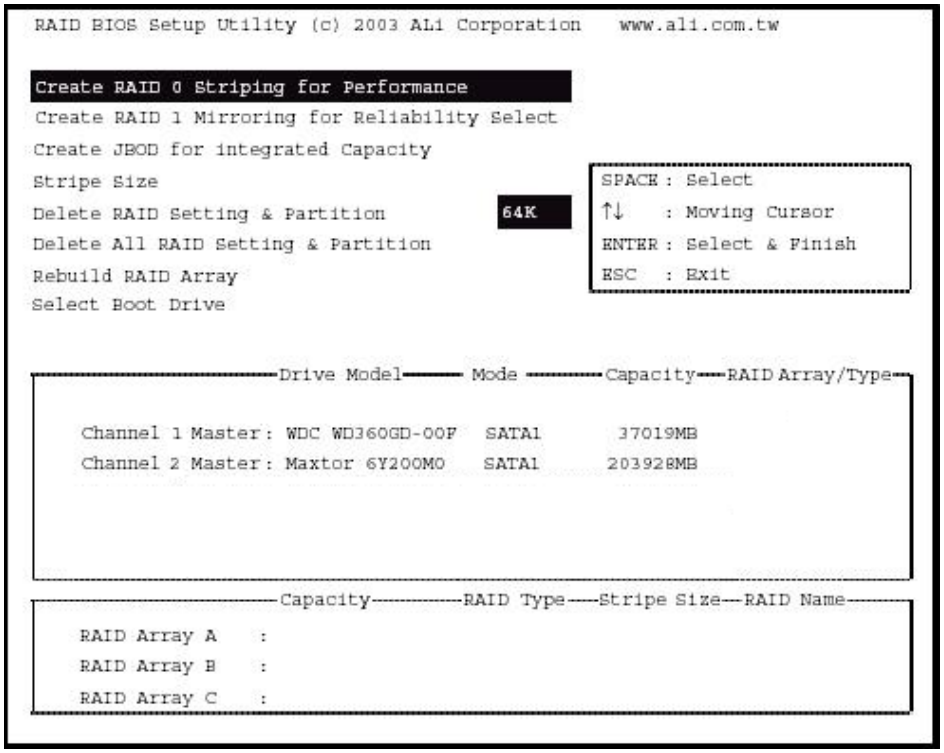
Channel 2 Master: Maxtor xxxxxx

Press Ctrl-A to enter ALi RAID BIOS setup utility

Press **CTRL** and **A** keys simultaneously to enter the RAID configuration utility.

F.4 RAID BIOS Setup Utility

The Serial ATA RAID volume can be configured using the RAID Configuration utility stored within the ALi RAID controller ROM. The BIOS configuration screen is divided into three major areas: Main Menu, Drive Menu, and a list for the configured RAID arrays.


RAID BIOS Setup Utility (c) 2003 ALi Corporation www.ali.com.tw
Create RAID 0 Striping for Performance
Create RAID 1 Mirroring for Reliability Select
Create JBOD for integrated Capacity
Stripe Size
Delete RAID Setting & Partition
Delete All RAID Setting & Partition
Rebuild RAID Array
Select Boot Drive
64K
SPACE : Select
↑↓ : Moving Cursor
ENTER : Select & Finish
ESC : Exit
Drive Model Mode Capacity RAID Array/Type
Channel 1 Master: WDC WD360GD-00F SATA1 37019MB
Channel 2 Master: Maxtor 6Y200M0 SATA1 203928MB
Capacity RAID Type Stripe Size RAID Name
RAID Array A :
RAID Array B :
RAID Array C :

F.5 RAID Options:

F.5.1 Create RAID0 Striping for Performance

WARNING!

All data previously stored on the member drives of a RAID configuration **will be destroyed** during the RAID initialization process. If “used” drives are used to create a RAID array, make sure the data has been moved or backed up before creating a RAID array out of the disk drives.

Step 4: Use the arrow keys to highlight **Create RAID0 Striping for Performance** and

press **ENTER**. A flashing ‘S’ appears at the **Drive Menu** where the member drives to be included in the RAID0 array can be chosen.

Step 5: Use the space bar to select members of the RAID0 RAID configuration. The flashing cursor changes to a lower case ‘s’ once any of the connected disk drives has been selected. Follow the same method to select another member drive.

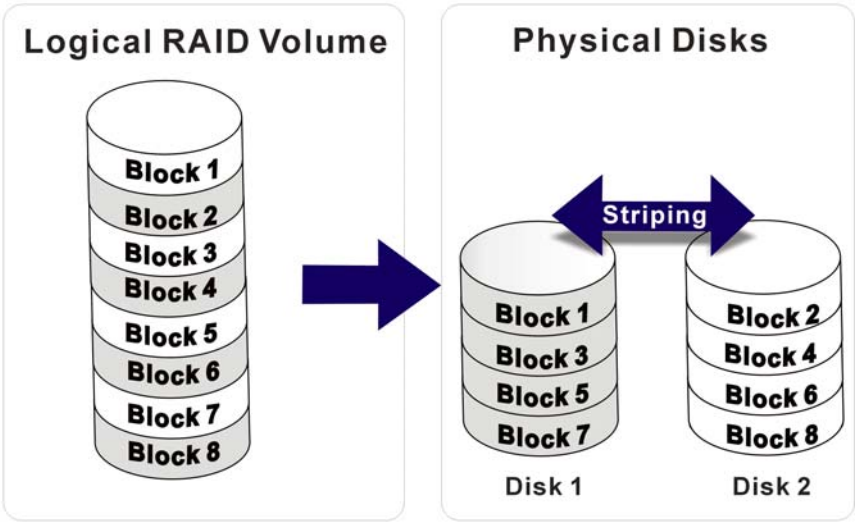
Step 6: The **Create RAID0(Y/N)** confirm box appears. Press **Y**.

Step 7: Enter a nickname for the created array. Upper and lower case alphabetic, numeric, space, and underscore characters are all applicable for naming an array.

Step 8: Once an array is successfully created, it will be seen in the list of configured arrays.

NOTE:

1. To reduce the chance of losing data, ALi imposes certain limitations on the RAID configuration options. Parallel-ATA drives connected on the same IDE channel cannot be selected as the members of a RAID0 array. Avoid mixing Parallel-ATA and Serial-ATA disk drives in a RAID0 array.
2. Always use disk drives of the same capacity to create a RAID array. The excessive capacity of a larger disk drive cannot be utilized because data stripes are equally distributed across all members of a RAID array.



F.5.2 Create RAID1 Mirroring for Reliability

WARNING!

All data previously stored on the member drives of a RAID configuration **will be destroyed** during the RAID initialization process. If “used” drives are used to create a RAID array, make sure the data has been moved or backed up before creating a RAID array out of the disk drives.

Step 1: Use the arrow keys to highlight **Create RAID1 Striping for Performance** and press **ENTER**. A flashing ‘M’ appears at the **Drive Menu** where the member drives to be included in the RAID1 array can be chosen.

Step 2: Use the space bar to select members of the RAID1 RAID configuration. The flashing cursor changes to a lower case ‘m’ once any of the connected disk drives has been selected. Follow the same method to select another member drive.

Step 3: The **Create RAID1(Y/N)** confirm box appears. Press **Y**.

Step 4: Enter a nickname for the created array. Upper and lower case alphabetic, numeric, space, and underscore characters are all applicable for naming an array.

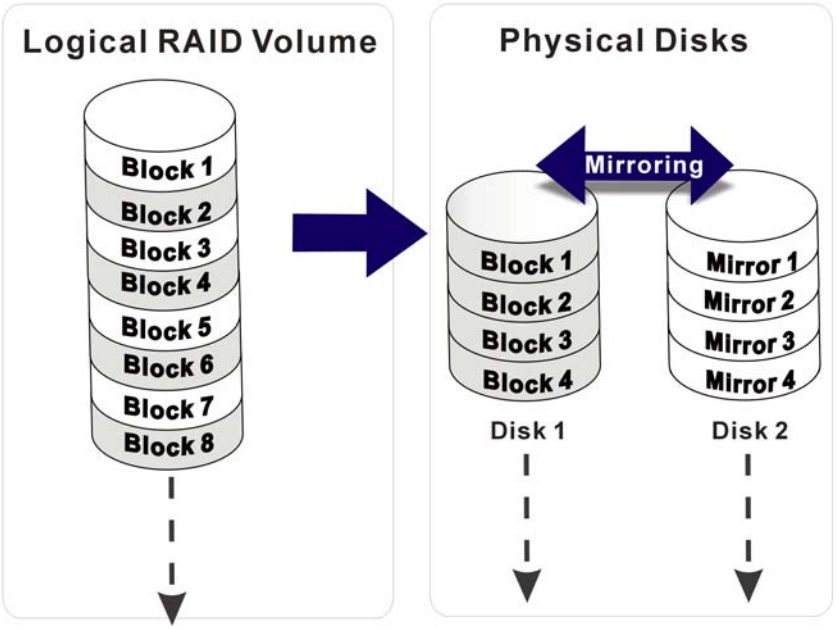
Step 5: Once an array is successfully created, it will be seen in the list of configured arrays.

Step 6: A prompt will appear to proceed with drive copy. The **Source** and **Destination** drives will be indicated as “M” and “m” in the **Drive Menu**.

NOTE:

1. To reduce the chance of losing data, ALi imposes certain limitations on the RAID configuration options. Parallel-ATA drives connected on the same IDE channel cannot be selected as the members of a RAID1 array. Avoid mixing Parallel-ATA and Serial-ATA disk drives in a RAID1 array.

2. Always use disk drives of the same capacity to create a RAID array. The excessive capacity of a larger disk drive cannot be utilized because data stripes are equally distributed across all members of a RAID array.



F.5.3 Create JBOD for Integrated Capacity

JBOD is defined as “Just a Bunch of Drives.” JBOD provides neither performance gains nor data redundancy.

WARNING!

All data previously stored on the member drives of a RAID configuration **will be destroyed** during the RAID initialization process. If “used” drives are used to create a RAID array, make sure the data has been moved or backed up before creating a RAID array out of the disk drives.

Step 1: Use the arrow keys to highlight **Create JBOD for Integrated Capacity** and press **ENTER**. A flashing ‘J’ appears at the **Drive Menu** where the member drives to be included in the JBOD can be chosen.

Step 2: Use the space bar to select members of the JBOD configuration. The flashing cursor changes to a lower case ‘j’ once any of the connected disk drives has been selected. Follow the same method to select another member drive. The maximum number of member drives in a JBOD is four and the minimum is two.

Step 3: The **Create RAID1(Y/N)** confirm box appears. Press **Y**.

Step 4: Enter a nickname for the created array. Upper and lower case alphabetic, numeric, space, and underscore characters are all applicable for naming an array.

Step 5: Once an array is successfully created, it will be seen in the list of configured arrays.

NOTE:

To reduce the chance of losing data, ALi imposes certain limitations on the RAID configuration options. Parallel-ATA drives connected on the same IDE channel cannot be selected as the members of a RAID1 array. Avoid mixing Parallel-ATA and Serial-ATA disk drives in a RAID1 array.

F.5.4 Stripe Size

The change to stripe size effects RAID0 arrays. Configurable options are:

- 64K (default)
- 32K
- 16K
- 8K
- 4K

Select a small stripe size if the I/Os to the hard drives are small and randomly occurred. Choose a larger stripe size if the I/Os are mostly large and come in sequential orders, e.g., A/V playback and editing applications. The default value should be appropriate for most applications.

F.5.5 Delete RAID Setting & Partition

WARNING!

If a RAID configuration is deleted, all data previously stored on the member drives of the RAID configuration will also be deleted.

Step 1: Use the arrow keys to highlight **Delete RAID Setting & Partition** and press **ENTER**. A flashing 'E' appears at the **Drive Menu** where the member drives to be removed can be chosen.

Step 2: The **Data on RAID drives will be erased (Y/N)** confirm box appears. Press **Y**.

F.5.6 Delete All RAID Setting & Partition

WARNING!

If a RAID configuration is deleted, all data previously stored on the member drives of the RAID configuration will also be deleted.

Step 1: Use the arrow keys to highlight **Delete All RAID Setting & Partition** and press **ENTER**.

Step 2: The **Data on RAID drives will be erased (Y/N)** confirm box appears. Press **Y**.

F.5.7 Rebuild RAID Array

The **Rebuild RAID Array** option can rebuild a RAID array if a member of a RAID configuration should fail. Neither RAID0 nor JBOD provides data redundancy. The **Rebuild RAID Array** option only applies to RAID1 arrays and is applicable when a member of a RAID1 configuration has failed.

Step 1: Use the arrow keys to highlight **Rebuild RAID Array** and press **ENTER**. A flashing 'R' appears at the list of existing arrays. The source and destination drives will be displayed.

Step 2: Press **Y** to begin the rebuild process.

NOTE:

A status bar will indicate the rebuild progress. Rebuild consumes considerable system resources and the time required for rebuilding a RAID array may vary depending on the size of stored data, disk drive capacity, and drive performance.

F.5.8 Select Boot Drive

Step 1: Use the arrow keys to highlight **Select Boot Drive** and press **ENTER**. A flashing 'A' appears at the **Drive Menu** where the boot drive can be chosen.

Step 2: Press **ENTER** or the space bar to finish the configuration.

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Appendix

G

Connecting an ATX Power Supply

The following notes show how to connect ATX Power Supply to the embedded board.

G.1 Using ATX Power Switch

Step 1: Disconnect the AC cord of the power supply from the AC source to prevent a sudden electric surge to the board.

Step 2: Remove the jumper caps from the JP2 jumper.

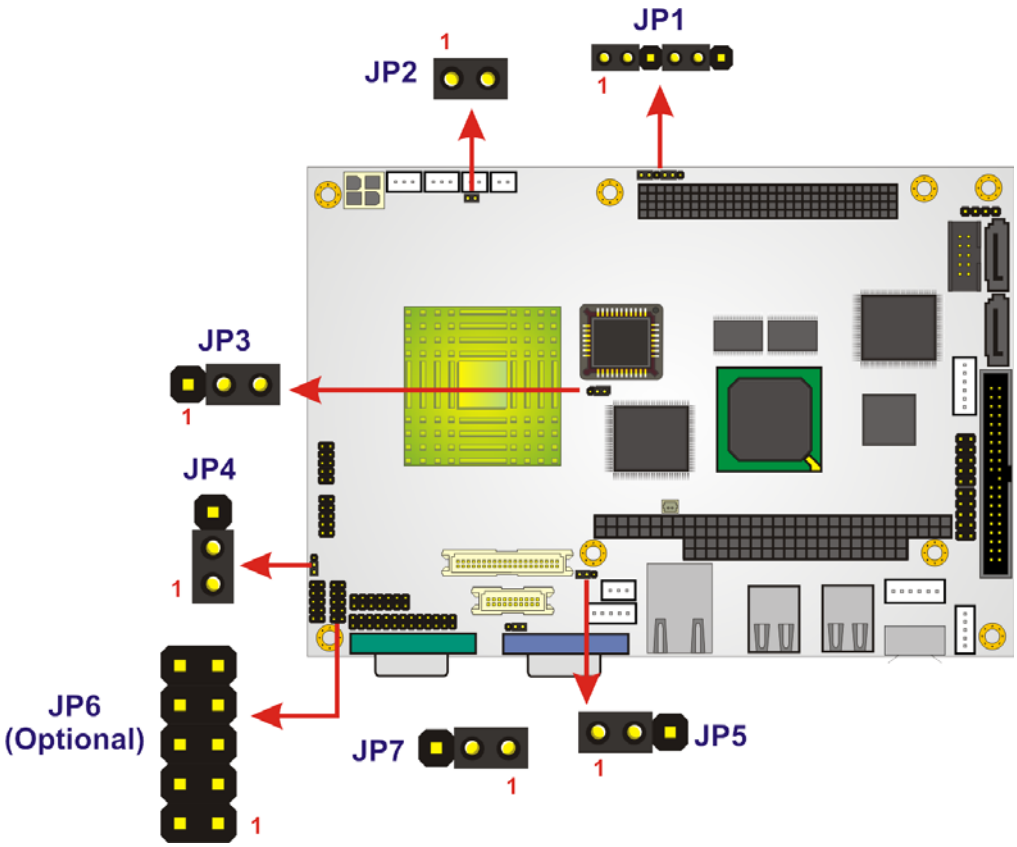

Figure G-1: Jumper Locations

WARNING!

The new power adapter cable for the NANO-GX has its “Ground” pin removed from the 3-pin ATX feature connector. Connecting the power feature connector cable will destroy the CPU board.

Step 3: Be sure that the standard 4-pin AT power connector is connected to the motherboard power connector (CN2).

Step 4: Connect the optional ATX power cable to the AT power cable using their 4P power connectors (**Figure G-2**).

Step 5: Connect the optional ATX power cable to the motherboard ATX connector (CN3) using the 3-pin ATX feature connector (**Figure G-2**).

Step 6: Connect an ATX power button switch to CN5.

Step 7: Connect the 20-pin ATX power connector to an ATX power supply (**Figure G-2**).

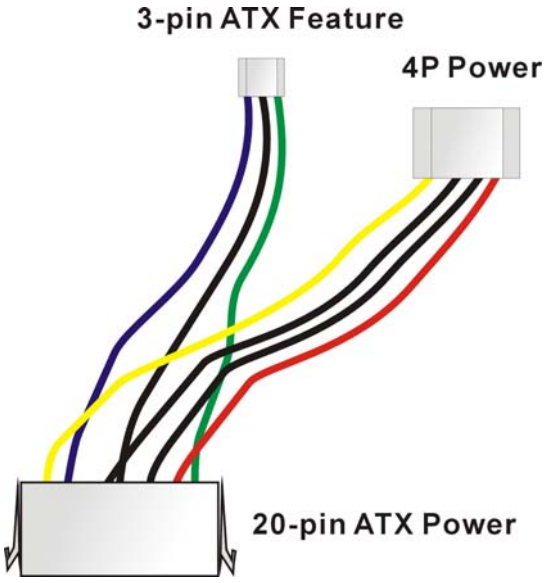

Figure G-2: ATX Power Adapter Cable

Step 8: Press the power button switch once to turn on the system. To turn off the power supply press the ATX power switch button for about 4 seconds.

G.2 Using AT Power Supply

Connecting to an AT power supply is as simple as connecting a 4P power connector to CN2. Power on/off is controlled by the power switch on the AT power supply. Let the jumper caps stay on JP2.

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